MOTORAGE

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Thirty-five Cents a Copy
Three Dollars a Year

A Letter to the Real Salesmen of the Automobile Industry

by

F. E. Moskovics

President

STUTZ MOTOR CAR COMPANY
OF AMERICA, Inc.
INDIANAPOLIS

THE NEW STUTZ with safety chassis is essentially a salesman's car. It is an automobile about which a real salesman can talk with the sincere belief that carries conviction and makes sales.

For The NEW STUTZ is not just an old model upon which some new accessories and appliances have been hung in order to get new "talking points".

The talking points of The NEW STUTZ are engineering points—basic construction points—safety points—performance points—value points—conservation-of-buyer's-investment points.

The NEW STUTZ is a car that generates real enthusiasm in every automobile merchant—the contagious enthusiasm which makes every buyer an "assistant salesman" after the sale.

There is both "man appeal" and "woman appeal" in The NEW STUTZ. From the most mechanical masculine mind to the most aesthetic feminine viewpoint, the car enchants all by its perfection and completeness in every detail.

It is the fastest selling, most profitable car to handle in its price-class today. And its popularity is but beginning. .

Salesmen in both large and smaller towns, and dealers in smaller towns, who have ambitions beyond their present achievements are invited to write me.

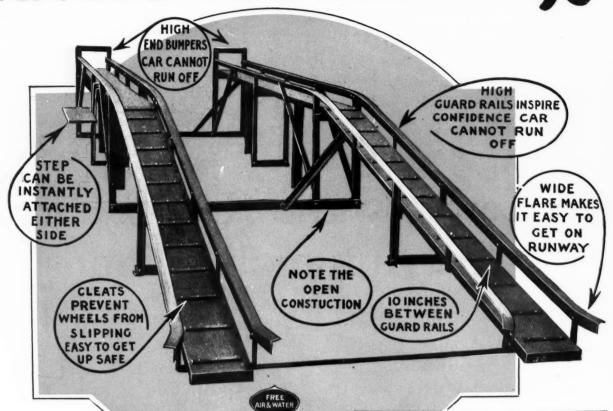
I will tell you how to cash in personally on The NEW STUTZ sales appeal.

(Signed)



A. E. Markonce

MANUEY SERVICE RUNWAY Price \$ 00



Manley
Air and Water
Station
Price \$50

THE hose of the Manley Service Stations on account of its freedom from injury by kinks, preventing cars running over it, etc., will outlast several lengths of hose not so protected. The garage may, therefore, expect to repay the cost of the station in a reasonable time, by the saving of the hose alone. Hose is returned by gravity—not by springs.

As a rule, the motorist who needs air or water will buy gas and oil where he gets the the air and water service. In many cases, instead of looking for a gas pump he looks for an air station, knowing that where he can get air he can also get gas and oil.

All Open in the Middle—No obstructions to interfere with the workman.

Double Legs and Extra Heavy Bracing—Tremendous strength and rigidity.

Truss Construction—Can be set up on any flat surface without any necessity for providing foundations of any kind.

Shipped with Legs Assembled—Cuts in half the time you spend setting it up after you get it. Saves trouble figuring out how it goes together.

DIMENSIONS

Height						. 2	8 inches
Horizontal							
Length of							
Height of							
Width of T	racks b	etw	eer	G	uar	ď	
Rails						. 1	0 inches

This is a year

Your Jobber Can Supply You

For new 1926 Catalog describing the entire

Manley line write to

MANLEY MFG. CO., YORK, PA.

Buick maintains stable prices for the of value protection of owners and dealers alike.

price, is established

as the Buick measure

And because great volume enables This is possible be- Buick to establish cause quality, not prices at consistently low levels.

Those who desire the Buick Franchise should have their names on file.

the Better BUICK

BUICK MOTOR COMPANY, FLINT, MICHIGAN

Division of General Motors Corporation

Pioneer Builders of Valve-in-Head Motor Cars

Branches in all Principal Cities-Dealers Everywhere

WHEN BETTER AUTOMOBILES ARE BUILT, BUICK WILL BUILD THEM

1922 by MURPHY (500 Miles) 94,48

Miles Per Hour

1924

by BOYER (500 Miles)

98.24

Miles Per Hour

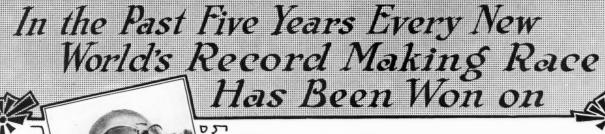
1924 (by HILL (250 Miles)

126.9 Miles Per Hour 1926 (250 Miles) 131.29 Miles Per Hour 1924

by FENGLER

(250 Miles)

Miles Per Hour



New Departure Ball Bearings

Each succeeding record means greater speeds, more terrific strains and greater need for endurance—many times that ever demanded in ordinary service.

Because they have never failed in any race, nor showed any signs of wear, practically every driver in the great speedway races uses New Departures exclusively. De Paolo's car, for instance, has 47, taken at random from stock.

The superlative quality which enables New Departures to endure the grinding, gruelling, racking stresses of such break-neck speed qualifies them for the same satisfactory service in any mechanism where reduction of friction and wear is advantageous and long life and uninterrupted service desirable.

THE NEW DEPARTURE MANUFACTURING CO.
Chicago Bristol, Connecticut Detroit



1926 by Hartz (300 Miles) 134.1 Miles Per Hour 26

No. 20

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J. S. Hildreth, Vice-Pres. and Director of Sales
W. I. Ralph, Vice-Pres.

DAVID BEECROFT, Vice-Pres. A. H. VAUX,

J. H. Collins, Vice-Pres.

Secretary and Assistant Treas.

H. J. REDFIELD, Treasurer

Cable Address: Motage, Chicago

Telephone: Central 7045

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SE-MENT-OL the ORIGINA Leak Fixer



Nationally known and used for years

SE-MENT-OL is known and used in every state in the Union. It is backed by an advertising campaign that reaches millions of people. The Country Gentlemen alone reaches a million and a quarter automobile, truck and tractor owners. A big Norwesco Ad appears every month.

SE-MENT-OL is cementing thousands of new friends each day. It does the work without worry, waste of time or effort. It is chemically correct and sold under a positive money-back guarantee of satisfaction. Push SE-MENT-OL and you're pushing a leader.



Catch the eye

of the Passerby



The Service

for your Service Station that includes a Water Service Sign (as shown) in attractive colors, a big Merchandiser display cabinet for your counter, a small stock of SE-MENT-OL and a sure, quick profit of 89%. Ask your jobber about it.

We have a new proposition

Sign Made in the famous NORWESCO Laboratories

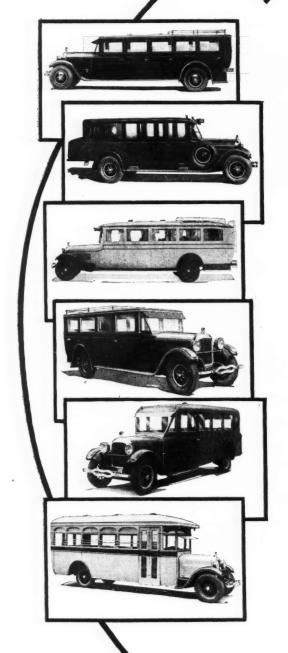
THE NORTHWESTERN CHEMICAL COMPANY MARIETTA, OHIO

In Canada—Norwesco of Canada, Ltd. Toronto, Ontario



NORWESCO PRODUCT

A Miller-Built Bus Body on Any Standard Chassis



A FEW years ago any old kind of a hack could get by—and get business—as a bus.

Not so today. Bus riders are not only becoming more numerous, but more particular. No longer are they satisfied with mere transportation—they are demanding *comfortable* transportation. And giving their business to operators who provide it.

Operators are realizing this. That's one reason why you will see so many Miller-Built busses on the highways and city streets from one corner of the country to the other.

Another reason is that Miller-Built busses are built to give—and *do* give—long and dependable service. 300,000 miles of profitable service is not unusual for these sturdy coaches.

Any of these Miller-Built body models may be had mounted on any standard chassis. No matter what size or type of bus you may be considering, it will pay you to get the facts and figures on the Miller-Built line before you buy.



A Trade Mark Backed by 36 Years of "Know-How"

The A. J. MILLER COMPANY

BELLEFONTAINE, OHIO

The Studebaker Franchise

was never more valuable

5 reasons why the
Studebaker franchise
Studebaker franchise
grows more day.
grows every day.

1. One: Profit Value

1. One: Profit Value

2. Unit: Built Construction

3. Always Kept Up to: Date

4. Used Car Pledge

4. Used Car Payment Rates

5. Low Time: Payment

STUDEBAKER

Advertise in The Trib

Smashes Sales Records In April

RETAIL deliveries of Studebaker motor cars in New York during April exceeded one million five hundred thousand dollars, breaking all past records. Chicago also recorded the greatest sales volume in Studebaker history.

- —in Philadelphia—third largest city in the United States — April Studebaker sales showed an increase of 14% over April, 1925.
- —in Fort Worth—Studebaker sales mounted 75% over April, 1925.
- -Boston showed a 28% increase.
- -Portland, Ore., a 61% increase and the largest month in the history of the business.
- -Los Angeles did the biggest April business in three years despite two weeks of heavy rain.
- -Rochester, N. Y., 20% over former years.
- -Toledo 15% over April, 1925.
- —in Seattle, April was the biggest month in history—and the first three months of this year exceeded the same period last year by 51%.
- -Miami showed a sales increase of 20% over April of last year.
- -Syracuse increased 19% over April, 1925.
- -Milwaukee sales showed a gain of 28% over April of last year.

Excess power, luxurious comfort and 100,000-mile stamina—all at One-Profit prices—have made these records possible.

Studebaker Corporation of America
South Bend, Ind.

The opportunity to represent Studebaker in your territory may be open. Your inquiry will be held confidential. Write or wire the nearest Studebaker Branch, or the home office at South Bend, Indiana.



Ajax Six-Another Nash Success

April Ajax Sales Lifted Nash Sales Gain from 35% to 70.9%

It was instantly clear to motor car dealers thruout the country the moment Nash introduced the Ajax that the move was a far-sighted one.

For with a 4-Door Sedan at \$995 Nash dealers could immediately widen their market downward tremendously and reach out for a great new army of prospects till then below the Nash price-range.

That is exactly what has come to pass—with the result that the big monthly Nash gains in sales have been increased to even higher figures by Ajax sales—

- and substantial dealer profits on Nash business have been heightened very considerably by the additional volume of Ajax deliveries.

In April for example, Nash sales and production climbed 35% above last year's mark—with Ajax sales and production added the increase over April 1925 was 70.9%.

NOTE: The extra profit Nash dealers are making because of the Ajax is often equal to the entire profit some dealers show.



926

money Car Washing

1 Hand washing is slow drudgery.

2 Solid water thrown with fire-hose force blasts the dirt off and the finish with it!

There's real money in car washing when it's done right. That means keeping costs down, turning out more completed cars per day, with less labor and less floor space; and at the same time, producing a result so highly satisfactory to the customer that he will advertise your wonderful service to his friends!

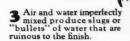
All this is made possible by the CURTIS "AIR-MIST" System (with water amplifier) as by no other method. As the pictures show, there is a definite and serious objection to all systems that have preceded this perfected "AIR-MIST" System. Only the CURTIS "AIR-MIST" overcomes all previous difficulties—both as to preservation of the car's finish, and as to the time and labor involved in the job. All previous car washing systems, indeed, have been merely leading up to the "AIR-MIST."

If you would like to turn car washing from a long, expensive job into a rapid and profitable one, send for the "AIR-MIST" catalog. Send the coupon and let us put the facts in your hands.

CURTIS PNEUMATIC MACHINERY CO. 1901 Kienlen Avenue , , St. Louis, Missouri

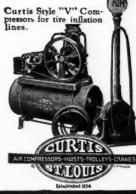
you can wash cars quickly, thoroughly, at low cost, and without injury to the finish—and that's what

you can do when you own aCURTIS"AIR MIST."



Air and water set by the exclusive CURTIS "AIR-MIST" method stays mixed, and reaches the car penetrating but harmless.





Curtis Column Type Air and Water Stands,

The "AIR-MIST" is made by the manufacturers of the famous Curtis Compressors for tire inflation lines, practically a standard in garages and filling stations.

CURTIS AIR CAR-WASH SYSTEM

~ with water amplifier

CURTIS Pneumatic Machinery Co. 1957 Kienlen Ave., ST. LOUIS, MO. 518-U Hudson Terminal, New York City.

I want to make my car washing profit able. Please send me, without obligation, your new free AIR-MIST catalog.

ADDRESS CITY.....STATE..... Jobber's Name.....

(3584)



Stronger Than Ever!

The addition of the new lower-priced Chrysler "60" to complete its magnificent line of cars of standardized quality—

—and the sweeping and sensational reductions in the Chrysler "70" without changing its quality or equipment in any detail—

—are in keeping with the Chrysler policy of always maintaining its dealer organization in the strongest possible competitive position which today, more than ever, makes a Chrysler franchise the most desirable dealer connection in the industry.

Your inquiry will be held strictly confidential

CHRYSLER SALES CORPORATION, DETROIT, MICHIGAN CHRYSLER CORPORATION OF CANADA, LIMITED, WINDSOR, ONT.

CHRYSLER

Fight for a Used Car Profit

Dealer Who Only Tries to BREAK EVEN Too Often Undershoots That Mark. Elevate the Target, Forget This Decoy and Aim at the Live Bird

OME day the trade will have the used car situation so well in hand all wide-awake dealers are going to show a profit in this department.

And by that is meant a net profit.

Just now we are passing through a stage of effort to break even on used cars, and because a great many dealers are satisfied to break even, consequently training their guns on this objective and nothing better, they more often shoot below the target than score a hit.

The most certain way to "break even" on used car transactions is to aim effort above that point, or in other words, include in the used car policy a rigid demand for a net profit on the establishment's used car business.

Until the dealer reaches that level where he is no longer afraid to demand a profit on used cars he will continue taking loses on this branch of the business, and until there is a dominant tendency in the trade generally to insist on more than *breaking even* such a thing as a net profit characteristic is not going to become epidemic.

One of the fundamental laws of accomplishment is this: It is folly to expect an attainment for which one does not strive.

If the trade does not strive persistently for a used car profit it follows that profitable used car departments will not be realized.

And if members of the trade continue to be satisfied with *breaking even* on used car transactions they will continue to undershoot this mark about as often, if not more often, than they hit it.

Why not abolish this *breaking even* objective entirely and go after the thing, which if producing nothing more, will at least make *breaking even* more readily secured?

Here is an extract from a letter received by MOTOR AGE from a dealer who we believe is on the right track in this connection:

"After years of dabbling and fiddling with the used car problem we have finally brought it to the plane of profit. This change took place only after we made up our

mind to stop compromising with the issue and to FIGHT FOR A PROFIT.

"It took more nerve, it demanded improved measures of management, it required the necessity of selling all members of our sales organization on our purpose and it demanded continual and unremitting FIGHT—but we finally got there and we are still fighting to hold our ground without giving up an inch by way of surrender.

"Our policy now as we look into the future is not to get just a *bare* profit on used cars—but the *fair* profit to which we are entitled."

What about a FIGHT FOR A USED CAR PROFIT throughout the entire trade? A wave of this sort is what the trade needs more than anything else.

Say we throw away the decoy about "breaking even" and begin shooting at the live bird.

If the trade does not put up such a FIGHT it is clear right now that the heavy rate of mortality through used car losses will continue unabated. Another letter, of a great many on this subject received lately by MOTOR AGE, from a leading dealer in a large metropolitan center says:

"Without a single exception every dealer who has "gone broke" in this city has dug his own grave by over-allowances on used cars."

By that same process dealers in all parts of the country are digging their graves today and unless there is a change many of them will be in their graves tomorrow, side-by-side with hordes of others who have gone on before.

The trouble with all these fellows was that they did not FIGHT.

The prosperity of the trade in the future will depend upon how much it is willing to FIGHT.

We are not going to go over the top to final victory until we begin, much more seriously and uncompromisingly, to FIGHT for a net used car profit instead of a "hope" to break even—which so often is only under shot.

Selling Maintenance

Expert Service and Satisfaction Compose Keystone of Flourishing Establishment's Policy in California's Imperial Valley

By ROY ALDEN

FF the beaten path of travel, far away from the big centers of population, there are frequently found automotive merchants in modest communities who have achieved remarkably large businesses. El Centro, located in the heart of the Imperial Valley, in the lower inland corner of Southern California, a few miles from the Mexican border, claims one of these outstanding successes in the business of C. E. Coggins, which operates under his name. Here in a town of approximately 8,000 people, the center of a rich agricultural area, reclaimed by irrigation which turned a barren desert into a land of great fertility, Coggins has built up volume that has scored as high as \$200,000 a year. The bulk of his business is represented in automotive maintenance.

Throughout the Imperial Valley, Coggins enjoys a reputation among farmers for the quality of his work, merchandise and service that has been carefully built and zealously guarded during the 12 years he has been engaged in the automotive business in his territory. That every customer must be satisfied means something more than sale promotion conversation or an advertising phrase in the Coggins policy! It is a policy that has been given absolute literal interpretation throughout all the years he has been in business, and it explains the reason for the remarkably substantial volume he now enjoys.

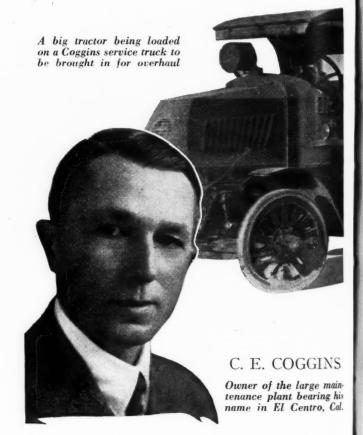
Coggins caters to everything automotive—automobiles, trucks and tractors. He has an establishment that is thoroughly modern with 30,000 feet of ground floor space—a frontage of 200 feet and a depth of 150 feet. In equipment alone in his repair department and machine shop, he has an investment of more than \$40,000, represented in five lathes, Heald grinder, large Landis Grinder, Norton universal grinder, Gould & Eberhardt Shaper, three drill presses, two hack saws and a complete assortment of small tools.

A Beehive of Activity

Outside of painting, top and upholstery work, Coggins can handle almost any character of automotive maintenance in his establishment. His shop is a veritable beehive of industry, with machines and men engaged in cylinder grinding, gear cutting, motor rebuilding, electrical overhauling, tractor repairing, etc. A welding shop and a woodworking shop are also operated in conjunction with the strictly automotive departments.

Coggins is distributor in the Imperial Valley for Exide batteries, Zenith carburetors, Robert Bosch Magnetos, Northeast Electrical Equipment, Milwaukee Motor Bearing, Automatic Piston, Perfect Circle Piston Rings, Thompson Silcrome Valves, Victor Head Gaskets, Lynite Pistons, and Cleveland Quality Iron Pistons. He also handles a good assortment of the more important accessories and car equipments, and does a good business in oil and gas

Coggins hasn't overlooked many profit opportunities in this business. He makes the most out of every customer contact.



About seventy-five per cent of Coggins' total volume is done with the farmers. He handles virtually all the tractor overhaul work in the valley, and some of these jobs reach as high as \$2,000.

There is a saying that if you can give a farmer absolute satisfaction on repairing his tractors, you are certain of getting his trade on his truck and automobile maintenance. Coggins has made an exhaustive study of every type of tractor in use in the valley, and he has a staff of tractor repair experts operating under his supervision who turn out work that leaves no room for comebacks.

Having definitely established his reputation as a specialist in successfully dealing with the "man of the land" Coggins can speak with authority on how to win and hold the automotive business of the farmers.

Knowing the Farmer's Problems

"Farmers like to trade with people who know their business and their problems, and who can talk their language," says Coggins. "It is important that the automotive merchant in the farming community gain an understanding at least in a general way, of the farming business, and to keep himself posted on crops, prices, marketing prospects, etc., so he can carry on an intelligent conversation with the farmers. When the farmer knows you are

to the Farmer out impressing on the farmer that you are doing it solely as accommodation. If you enjoy his confidence, you avert a lot of dissatisfaction by having a thorough understanding at the time the job is taken in. I speak of the matter of confidence, because otherwise the farmer may think you were merely trying to boost his bill without honest cause. Adding to the Original Order "We also make it a point to get in touch with our customers when we have a job down and find some trouble in addition to that listed, and endeavor to get authority to correct it. We want to be in a position to absolutely guarantee every car, truck, or tractor that goes out of our shops to be in A-1 mechanical condition, but, of course, there are frequent cases when we are restricted by the customer to perform only certain

Farmers who insist on doing their own repair work are encouraged to come to the Coggins plant to do it, being given use of a crane and certain tools at a small cost. This picture shows where such farmers are assigned space for work

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acquainted with his business he is much readier to place confidence in you than if your scope of knowledge only embraces your own particular sphere of activity. The trade of the farmer is not easily drawn away from you, if you have given consistent satisfaction. He likes to do business with one house in each given line of business and his patronage can be permanently retained if he is treated right. That's the nice thing about dealing with farmers. But turn out a shoddy piece of work for a farmer and let his dissatisfaction go unchecked, or commit a violation of honest and straightforward business practices, and you not only lose his trade forever, but you lose the trade of a good many others with whom he comes in contact.

"We make it a point to follow up every job we do, and never assume that the customer is satisfied. We want to know positively, and we find out. Keeping satisfied customers among farmers, however, means more than doing the work ordered in a satisfactory manner. It also means a careful analysis of each job as it comes in. Many farmers will bring their trucks, tractors or automobiles and order what really amounts to patch jobs. Right then is where the automotive man must be careful to guard his reputation, and to make every effort to sell the customer on the necessity and economy of having whatever unit is receiving attention completely fixed up. And if he can't receive authority to do the work as it should be done, he should take the time to clearly explain to the farmer what he may expect. Never do a patch job with-

work. When we are restricted, however, we never turn a machine back to the owner without fully informing him of whatever condition still exists that has not been corrected, and what the consequence may be. By religiously following this plan we have mighty few cases where customers give voice to any dissatisfaction concerning their patronage at our establishment. And the few cases that do come up can, as a general rule, be easily taken care of by reminding the complaining customer of the statement of facts we presented upon the delivery of the job.

In the case of large overhaul jobs, Coggins emphasizes the importance of giving the farmer an approximate idea of what the cost will be.

"Farmers as a rule are inclined to think in terms of the cost of unskilled labor, because that is the only kind they employ, and they must be educated to appreciate that efficient repair work on automotive equipment calls for highly skilled labor that must be well compensated; also that a heavy investment in equipment and parts is required that their wants may be promptly taken care of. Letting the farmer know in advance about how much his job will run is another mighty good insurance policy against possible disgruntled customers. Another thing we do is to give the customer an itemized statement of his bill, showing just how the various expenses entering into the total were distributed."

Coggins or his shop foreman, Verne Hess, personally tests every job delivered from the shop. Every precaution is taken to make certain that the work authorized was thoroughly done.

(Continued on page 30)

May 20, 1926

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Plan-Merchandise-

New Dealer's Scheme Should Include an Eventual
Goal for the Business and a Definite
Program for the Year and
Fractional Periods

By CLARENCE PHILLIPS

N the first article of this series the case of the prospective dealer was carried only through the "prospecting" stage. In the present article it is assumed that prospecting is a thing of the past and that the dealership has become an actuality.

Our newcomer in the field of automotive merchandising is all set to go. He has found through preliminary survey that the make of car he will represent is one of sufficient selling potentiality in a specific community and he has fortified himself with other information found valuable in taking the enterprise to the point of definite embarkation in business.

Now what?

To begin with there must be plan.

It should be a plan which preconceives the future not only one month, six months and one year hence—but several years hence. The dealer should have in mind an ultimate goal expressive of his ambitions for the eventual development of his business. Five years from now, we will say, he would like to have a business of certain proportions, with gross volume reaching some set mark and with net profit attaining a desired height. To be sure he does not *know* what his position will be five years from now, but that is not the point. Hang up this prize. Make it a part of the planning program. In any planning operation it is necessary to establish at least a rough objective. Through this process the dealer brings his whole scheme to a basis of definite purpose.

Fit Year's Plan Into General Scheme

The purpose of *plan* is to accomplish a material end which is attained by numbers of contributing accomplishments en route, each one realized through a design belonging to the general planning program. Therefore, when the dealer plans for a certain realization five years hence he fits into the general scheme his plan for the year and in planning for the year he prescribes a plan for the quarterly periods, halves, months, weeks and possibly even days. For each of these periods its proportion of the desired yearly volume is specified.

There are positive advantages in stipulating volume quotas in this manner for individual departments. Let the shop foreman know that shop production must come up to a certain notch and what the daily, weekly or monthly volumes must be to maintain such a rate of business and he will be more apt to hold up his end of it than where no such guide by which to measure results is set forth. And so it is in the case of other departments and employes. Expectations of all producing elements in the organization, expressed in actual figures, compose a vital part of the plan program and organization efficiency.

Hence it is well to make a beginning by setting up a series of theoretical targets and then give attention to marksmanship. While these targets should not be out of reason they should not be made easy to hit, for the whole idea is to stimulate effort.

The dealer who follows this method logically will arrive at a better basis for quota setting after some experience in business and it might be that at the end of the first year his broadened perspective will dictate even radical changes in the general scheme. But even to start out with a plan falling short of the ideal is better than starting out with no plan at all.

in the plan. Set a volume mark for the year for the whole business and quota each department. Revise the program now and then if necessary but insist on progress toward a definite end.

Perhaps it should have been said in the beginning that the dealership seeking to make the best of the opportunity should be departmentized into such revenue producing units as new cars, used cars, accessories and service. These four branches offer opportunity for unlimited extensions under each head. Each one should be made to stand on its own legs.

While the dealer might be able to make a substantial profit on the sale of cars, alone, if he stops there he is availing himself of but one of the various sources of income that naturally fit into such a business. Moreover, it has been amply demonstrated that much new car business and used car business come through service department contacts and other divisions of the plant. At the same time new car contacts and accessory department contacts develop business for the service department. Each department helps other departments to the full limit of the co-operative system and under such an arrangement each department has a chance to make profits that otherwise would not be possible.

Later on in this series of articles it is intended to talk about some of the more serious mistakes made by many now successful dealers during their early days in business. Without bringing in details of this angle out of its turn

Make Each Department Pay

SERVICE DEPT USED CAR DEPT ACCESSORY DEPT. NEW CAR DEPT.

let it be said now that failure to profit through the shop and neglect of the opportunity in accessories are bound to play amazingly large roles in dealership failures.

The dealer seeking his big-

gest opportunity should plan

for a departmentized plant,

making each branch stand on its own legs

Dealers who have fallen by the wayside with their curse upon a bad car selling season would, in countless instances, have weathered the storm had they properly cultivated the opportunities in service and accessories.

Vigorous Merchandising Necessary

Merely incorporating departments for new cars, used cars, accessories and service in the plant's organic scheme is not enough to warrant expectation of success. In addition to having a book keeping system which will tell at any time where the business stands as a whole and where each department stands, this is necessary:

Each department should be merchandised.

That means in the plan for the department there should

THIS is the second article of a series on "Planning and Launching a Dealership."

The first article, in the issue of May 6th, dealt with preliminary steps which are necessary before actually beginning the enterprise. In the present article points are discussed which should be given serious consideration

which should be given serious consideration after deciding definitely on the make of car and locality—and as the business is about to get under way.

Succeeding articles will present the results of a survey revealing the more dangerous pit-falls in the way of the beginner. The next article will appear in the May 27th issue.

be intensive and consistent promotion. Go out after the business.

It is not enough to hang up a sign indicating that the house has a service station and that it deals in accessories, tires, parts, etc. But the newspaper advertisement, direct mail and other devices can be used by the alert automotive merchant in developing gratifying volumes for both service and accessories as well as for new and used cars.

There is a mid-western dealer who follows a good plan to copy in this connection. He keeps up four scrap books containing promotional ideas for new cars, used cars, accessories and service. Any good thought

he finds in print or which can be reduced to print with a typewriter goes into one of these books. One interesting thing about his books is the fact that many of the suggestions picked up several years ago are just as valuable today as they were then. By going over his scrap book he always is in a position to pick out material

for a new campaign for any department and these campaigns are turned loose one after another with clocklike regularity.

That is merchandising.

It is the constant, hammering effort that finds patronage and which contributes hugely in building up the business. Spasmodic campaigning is of limited value and the plan of individual promotion for each department, charging the department with the expense thus incurred, is by far the most effective and satisfactory system.

Let it be repeated, the dealer should insist on each department sustaining and developing itself, with an efficient accounting system as the referee.

Even Demand a Used Car Profit

Insist on a fair profit from each department and regardless of the laugh of some dealers—insist on a used car profit. That is good policy even if the profit is not always realized. Books that show exactly what is happening in used car transactions at any time are indispensable to a clear analysis, not only of used car conditions, but of new car profits and to the removal of clouds from the

(Continued on page 30)

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Complicated Generators

BILL FIXIT STORY No. 19

PREVIOUS installments in this series by A. H. Packer were published March 19, April 2, April 16, May 7, May 21, June 18, July 30, August 13, September 3, September 24, October 22, December 10, and December 31, 1925; also February 11, March 11, April 1 and April 22, 1926. SYNOPSIS: Bill Fixit's electrical trouble shooting men start on a trip in a Speedway car. They stop at various places along the way and in a mining community are robbed of all their money. This necessitates getting a job with the local electrician, to whom they give some helpful information gained in working in Bill Fixit's garage. Directional radio is used by government agents in locating a gang of crooks and the boys' money is recovered. The trip is continued and the night after leaving the mining town they stop with Barney Oldfield Smith, an amateur race driver and help him with a magneto job, where a new condenser is needed. After getting a number of electrical pointers from Bill Fixit's man, Barney decides to open an electrical shop. Several jobs come in and the Red Head and Valvy do their share of the work. After finding that there is not a grat deal of profit in repairing only, Barney installs an accessory case besides the gas pump and the Red Head gives a few pointers on selling and then explains the best place to connect any electrical accessory.

O-HUM," said Valvy, afflicted somewhat with spring fever. "I wish something new would turn up. This electrical game is the same stuff over again, every day."

"Then look at this," said Barney, who had been playing with the new electrical test bench he had just bought. This old low tension magneto I am driving here sure does some funny stunts."

Barney slowed it down and speeded it up as Valvy watched and as the speed varied, there was a glow in a 110 volt bulb lying on the bench, the filament brightening in proportion to the speed at which Barney drove the magneto.

Valvy began to get interested.

"I thought I'd seen it all," said Valvy. "I thought 110 volts was comparatively high voltage and yet you light up one of those bulbs with a low tension magneto. Let's see what it does to a six volt head lamp bulb.

Now it was Barney's turn to be surprised for the six volt bulb did not seem to light up at all.

"Burnt out," said Barney. But as he tried it out on a six volt battery, it worked as a good bulb should. Then trying the 110 volt bulb the magneto again proceeded to make it glow.

"Maybe the Red Head can tell us why this ancient magneto is labeled low tension, lights up a high voltage bulb and fails to light up a low voltage bulb," said Valvy.

A Lesson From Niagara Falls

"And there's another thing I want to know," said Barney. "I want to know what we would have to do to make a generator out of this magneto so we could use it to charge a battery.'

When Red came into the shop the various questions were repeated to him and after thinking a minute or so he said, "Did you fellows ever see Niagara Falls?" Neither had seen the falls but each had a good idea of what they were like from seeing them in the movies.

"Well," said Red. "Suppose those falls were just as high as they are now, but dried up until a stream of water flowed over about the size of a pencil. How much power do you think could be developed with just a trickle of water like that, even if it fell from the sky?"

"Not very much," said Barney.

"Now suppose again that we had all that water but it did not fall, which would mean we had a lake like Lake The Red Head Explains Why a High Voltage Machine May Not Operate a Low Voltage Lamp

By A. H. PACKER

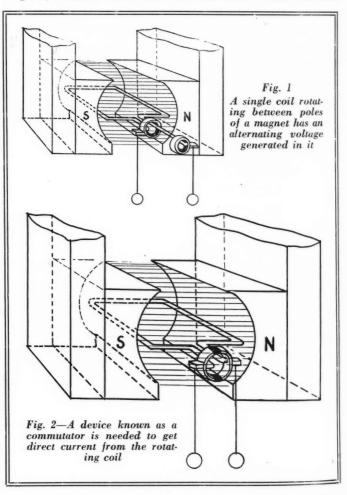
Erie or one of the other lakes, but no way to make it flow so as to fall on a water wheel. How much power could we get with the water just standing still.

"Not any, I guess," said Valvy.

"Oh, I see," said Barney. "To get water power you have to have both quantity and pressure and I suppose that the electricity is something like that."

Some Whys and Wherefores

"Just so," said Red, for in electricity the voltage is like the height of our falls in the Niagara River while the current which we can measure with an ammeter is like the quantity of water which flows past a certain point in the river in a given time. Now your magneto has a comparatively low voltage when compared to the spark plug voltage, but the particular one you were playing with probably generated 60 or 70 volts. On the other hand in order to generate that much voltage with a small armature it probably uses rather small wire. That is why it could light up the 110 volt bulb and make it glow, because that bulb did not need much current.



Simple in Principle

On the other hand the 6 volt bulb needed 3 amperes which was about six times the current the magneto winding could give out. That is why the lower voltage bulb did not light up.

'And I suppose it would be just as bad trying to

charge batteries with it," said Barney.
"Worse," said Red. "Not only is the winding designed for low current at too high a voltage, but the magneto delivers alternating current and would require a commutator having two segments in order to turn one half wave over and get both halves going the same direction

through the battery.

"The generator and the magneto are not so very different, though," said Red, "aside from the question of the commutator. Each one has a field of some kind, that is, a part of the machine that produces magnetism. Each has some part that rotates, usually an armature with wires on it and each has some way of collecting the current and delivering it to an outside circuit.

Changing Values of Magnetism

"When we consider the principle on which ignition coils operate we usually figure that changing magnetism in a coil produces the voltage. When we go to magnetos we can figure the same way, except that the rotation of the

Fig 3 increase the voltage several turns are used in each armature coil Fig. 4—Using several coils gives a smoother flow to the direct current

TO My Fellow Trouble Shooters:

As I was writing this electrical article giving a few simple generator principles, I thought: "This should be good stuff for the new subscribers, but how about the experienced electricians?"

Then I decided I would go into the more complicated points of generator testing and repair, and, to see how many there were, I started to jot them

I put down THIRTY-FIVE ideas for kinks and tests to give to Motor Age readers and these will be given in the coming Bill Fixit stories.

coil makes the magnetism in it have changing values. When we come to consider the generator we sometimes figure that wires cutting through lines of magnetic force have voltage generated in them, but there also we can think of it as the changing magnetism through the armature coils that does the trick.

"Here are a few sketches," continued Red. "And I believe they will make some of these principles a little clearer as well as bringing out the main difference between

a magneto and a generator."

This first one (Fig. 1) shows a single coil revolving between the poles of a magnet. In the position shown the lines of magnetic force which we say go from the north pole to the south of the magnet go parallel with the plane of the coil. That is, the coil does not encircle or enclose the magnetism. On the other hand, when the coil has turned 90 degrees it will be in a vertical position and will be enclosing nearly all of the lines of magnetic force.

Then as it rotates farther it will enclose less and less magnetism while as it turns still farther it will again start to enclose the magnetism, but because the coil has turned over, the lines of force go through the other way, as far as the coil is concerned. This means that there is a reversing magnetism through the coil which we have previously found produces an alternating voltage in the coil.

With connections made with brushes and slip rings we can get this voltage to produce alternating current in an outside circuit. In the practical magnetos, there is but one slip ring, or brush contact, the other connection being made through the frame of the machine or ground as it is called.

Reversals at Each Half Turn

Now as far as the outside circuit is concerned, what we need to get current going in the same direction is a reversal of connections at each half turn of the rotating coil and this is done in this other sketch, (Fig. 2), where the coil is similar except the ends are connected to two segments of a commutator. Now as the coil rotates and has a reversing voltage generated in it, we reverse the connections, due to the commutator rotating under the brushes, so that current in the outside circuit will always be sent in the same direction.

"This simple type electric generator has several things wrong with it. In the first place it gives a very slight voltage, because there is only one coil cutting through the magnetism and it is necessary to cut through 100,000,-000 lines of magnetism a second to generate a volt. Then we find that the magnetism is too weak and the current too jerky, because the current builds up to a certain value, then dies down to zero and then builds up so that it comes in waves, although with the commutator the waves would all be in the same direction.

"To overcome the trouble with low voltage we find that (Continued on page 19)

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Publicity Tom-Toms Stress New Dealers Formal Opening

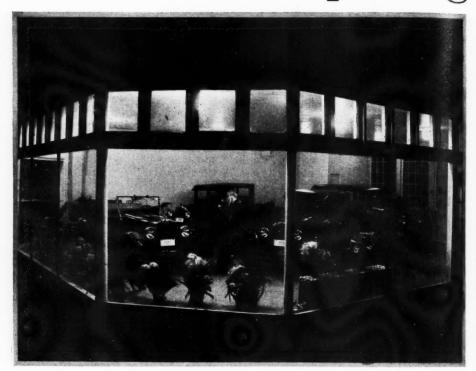
AFTER occupying the position of Oldsmobile branch manager at Memphis, Tenn., for 18 months, Geo. L. Evans has opened a dealer establishment in Nashville, Tenn.

Considerable public interest was displayed at the formal opening of the new premises on Broad Street, where various models of Oakland and Pontiac cars were on view. More than 1,000 visitors inspected the building and the cars on that day and many valuable additions were made to the live prospect list.

The success of the opening was undoubtedly largely due to the intensive advertising campaign carried out for two weeks previously, and the prominence given to the Pontiac range which is more or less new to Nashville.

Already Mr. Evans has eight salesmen hard at work and looks to the future with confidence.

The premises comprise a building 150 feet long by 50 feet wide, one story high. The show room is 40x40 feet, with a strip taken off the back end for the manager's office and salesmen's desks. At the side is a 10-foot driveway for cars entering the garage and the show-room. Back of the showroom is a storage space 85 ft. x 50 ft. which is divided by a low partition from the shop.



Looking through the show windows of new Oakland and Pontiac dealership in Nashville, Tenn., during formal opening. George L. Evans is the proprietor

Delco Generator with Shunt and Third Brush Field

To those working on the electrical systems of motor cars the following information from the Standard Auto-Electrician's Manual will be of interest.

Type—Four-pole, shunt wound, 3rd brush regulation in combination with stabilizing field. Two of the coils are connected directly across the main brushes and are known as the STABIL-IZING FIELD. They are wound with comparatively fine wire, the resistance being about three times that of the ordinary Delco field. The two opposite coils (wound with larger wire) are connected between the insulated brush and 3rd brush and are known as the THIRD BRUSH FIELD. The polarity of pole pieces is same as ordinary 4 pole job, that is N-S-N-S.

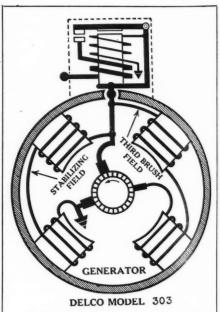
Operation—In order to clearly understand the operation of this type generator it is necessary to consider separately (1st) the electrical characteristics of a straight shunt generator; (2nd) those of a 3rd brush regulated generator; and (lastly) the result of combining the two. It will be recalled that the output of a shunt generator increases in direct

proportion to its increase in speed. This is the function of the stabilizing field; however, the size of the field wire offers a certain resistance and the out-put is held to a predetermined amount. In the case of a 3rd brush regulated generator the current out-put increases rapidly until a peak or maximum rate is reached, while a further increase in speed results in the falling off of the charging rate. By combining the two types in one unit, the current out-put is held more constant over a greater range of engine speeds.

Adjustment—Due to the fact that but two field coils are affected by changing the 3rd brush position, a very fine adjustment can be made which will not change due to the seating of brushes. This is not the case on the ordinary 4 pole 3rd brush regulated machine where the distance through which the 3rd brush can be moved is small and the slightest movement effects a comparatively large increase or decrease in the output.

Locating Trouble—Should generators of this type develop trouble with low

(Continued on page 20)



This is a cross between a third brush and a plain shunt machine

Relay Axle Uses New Principle

Commerce Motor Truck with This Unit Employs Inertia of Chassis and Load to Pull Out of Bad Holes

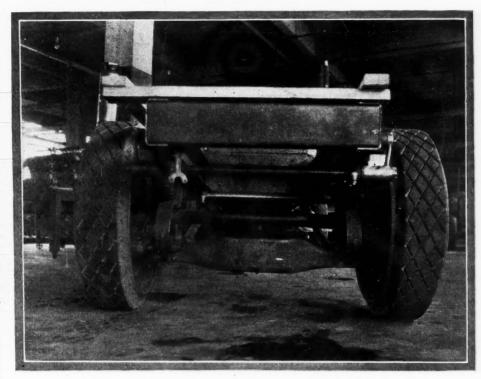
N a 31/2 ton truck manufactured by the Commerce Motor Truck Co., Ypsilanti, Mich., use is made of a new principle of power transmission, in what is known as the relay axle, for the final drive whereby the performance of the truck is said to be greatly improved and its field of usefulness extended. The major part of the weight of the truck can move with relation to the axis of the rear axle, and when power is applied to the axle this weight is moved in such a way that it helps maintain the momentum of the truck while under way and also assists in starting and in overcoming obstacles.

The general principle of the axle may be described briefly as follows: By a gearing arrangement in the rear wheels which forms a part of the driving system and a flexible connection between the axle and frame when engine power is applied the chassis is moved forward and upward several inches before the wheels start to roll which occurs when the moment of the weight lifted overbalances the moment of the traction resistance. When an obstacle, hole or soft ground is encountered, the weight of the truck is lifted further, whereby the moment of the weight is increased, and this increased moment assists the engine in overcoming resistance. It is asserted that since the weight moves forward and upward before the rear wheels begin to rotate, the wheels have better traction, because the initial momentum assists the wheel traction.

The Underlying Principle

Before a detailed description is entered into on the relay drive axles the following illustration may give a better understanding of the underlying principle. If a man commences to climb up the spokes of one of the large rear wheels of a farm wagon standing on a smooth road, the vehicle will move forward. When the rear wheels come to a large obstruction, or the ground is too soft to provide traction, the wagon will cease to move. To overcome the resistance the man must climb up the spokes until he reaches a point where his weight will overbalance the resistance to the motion of the wheel and the forward motion is resumed.

In the relay drive axles there are three major parts. These are the dead axle which carries the wheels, the live axle which is driven from the propeller shaft in the customary manner, and, finally, the internal gear and pinion which transmit the power to the wheels. As can be seen in the illustration, the rear springs are connected with the lower or live axle housing by special design D-shaped forgings. These forgings, together with two radius rods, tie the live axle hous-



Rear view of the Commerce 3½ ton truck showing the Relay Drive axle in position. The manner in which the weight of the truck is taken on the live axle through the "D" shaped forgings and then transferred to the dead axle should be noted

ing to the chassis. The ends of the dead axle are keyed to the centers of two circular-shaped castings, and at 7 in. from the centers of these castings bosses are provided to enable the castings with the dead axle to swing on bronze bushings around the live axle housing.

It will be seen that when the truck is at rest the pressure due to the weight of the chassis and load is transmitted through the rear springs to the live axle housing by the D-shaped forgings. As the circular castings are carried in the dead axle and the former support the live axle housing it will be noted that the total weight is transferred to the dead axle and then to the wheels. Provision is made to allow the live axle to swing 60 deg. on either side of the central point established when the truck is at rest. As the live axle is connected directly with the chassis frame, when power is applied, the truck will move in conformity with the movement of the live axle.

The construction of the relay drive also enables energy to be stored between the peaks of road resistance, which accounts for the weight assisting the truck during peak periods.

The action may be summarized briefly as follows: The pinions continue climbing the circular track until they have taken a part of the load sufficient in amount to cause the wheels to rotate. While the engine is delivering a constant torque to raise the weight of the load, the weight is constantly acting downward in a manner to cause the rear wheels to rotate. Although additional power is required to overcome the road resistance when an obstacle is encountered the power delivered by the engine is kept constant. The amount of extra effort required to surmount the obstruction is automatically determined by the size of the obstacle. When an object is encountered the wheels slow down but due to the momentum of the truck, the chassis moves upward and forward with the pinions automatically following up the circular track. When the weight on the pinions is sufficient to cause a state of overbalance the wheels move foward and climb over the obstruction. Finally, in overcoming road resistance, the relay drive uses the power of the engine directly and it also draws upon the momentum of the truck and its store of potential energy.

third

Decided Advantages Are Claimed for This New Cooling System

"Iso-Therm," a Replacement Radiator Core Provides Evaporative Process Where Water Has Been Previously Employed

By DONALD BLANCHARD

BETTER lubrication, easier starting in cold weather, increased fuel and oil economy, and smoother performance are among the advantages claimed for an evaporative (or steam) cooling system which has been developed by the Harrison Radiator Corp. The new system is being marketed through United Motors Service, Inc., under the trade name "Iso-Therm" as a replacement for all makes of cars with pump circulation.

To install the system, no changes in the conventional water-cooling system are necessary except the substitution of the special Iso-Therm radiator core which is the principal item of equipment furnished by Harrison. This radiator differs from the usual type in that its passages are horizontal instead of vertical and it has tanks at each side of the core, but no bottom tank. The retail price of the equipment is approximately the same as for the conventional type of core for the particular car on which the installation is to be made.

Externally the car is not altered in any way by the installation of the special core nor are many differences to be noted under the hood. Fig. 1 shows the system applied to a popular four-cylinder car and the principal differences noticed are that the hose from the engine outlet connects near the top of the tank on the left side of the core while the pump inlet is connected to the radiator near the bottom of the tank on the right. In addition, a small tube connects the pump inlet with the right tank, the function of this connection being to release any air which may be trapped at the intake.

Regulating Water Levels

The level to which the system should be filled has been determined for each make of car and petcocks are installed on one of the radiator side tanks to indicate maximum and minimum water levels. When the system is filled, water is poured into the radiator until it starts to flow out of the upper cock.

It might be of interest to explain the procedure followed in determining the proper position of the petcocks. The system is first completely filled with water and then the hose connection at the radiator inlet, indicated by X in Fig. 1, is opened. The engine is started up and run at about 1200 r.p.m. until water ceases to flow from the hose.

The engine is then stopped and a rubber tube attached to the radiator drain cock. In the other end of this tube a piece of glass tube about 12 in. long is inserted. The drain cock is opened and the point to which the water rises in the glass tube indicates the proper level for the system. As stated previously, this work has all been done at the Harrison factory and the radiators come with petcocks installed at the proper points.

The name "Iso-Therm" was adopted for the system as the temperature of the water in the jackets is at all times at the boiling point, 212 deg. F., except for the few minutes required to heat it up to this temperature after starting from cold. In a water cooled engine, the temperature of the cooling water varies between wide limits depending on the load, the speed of the car and atmospheric conditions, but with the Iso-Therm system, the engine operates normally with the water in the jackets at a constant and relatively high temperature. From the standpoints of lubrication and fuel economy, this is obviously a desirable condition

Operation of the engine at this temperature does not result in loss of power nor does it promote knocking, it is said, provided the cooling system is designed so that the engine will run satisfactorily at a jacket temperature of 170 to 180 deg. F. In other words, if trouble develops when an engine is run hot with water cooling, the change to the Iso-Therm system will not make conditions any worse. Such troubles are usually attributable to the design of the block and not to the cooling system.

The steam formed by the boiling of the water enters the radiator at A, Fig. 2, where it strikes the vertical baffle B which tends to separate any water which may be carried over from the jackets. Incidentally, the amount of water passing over with the vapor depends on the engine output. At light loads, the steam is reasonably dry while at high outputs considerable water enters the radiator with the vapor. In other words, the circulation of water through the jackets varies with the load.

The water separated by the baffle drops to the bottom of the tank and passes through the lower passages of the core where it is cooled, while the steam traverses the upper passages and is condensed. The water leaving the passages on the right side of the core collects in the bottom of the tank C. From this place it is pumped back into the jackets.

It will be noted that the vent is from the cold side of the radiator which is an important feature of the system. In the usual water-cooling design, the entrance to the vent pipe is in the upper tank above the water level. As the cooling liquid is hottest at this point, a loss of vapor takes place and, in winter, of alcohol. In the Iso-Therm system, the

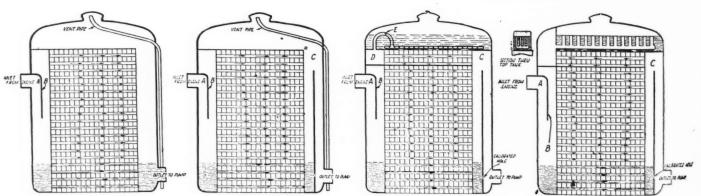


Fig. 2—Diagrammatic section of one type of Iso-Therm core. Note that the passages are horizontal

Fig. 3—In this type, there is a vertical baffle in the right tank with a metering hole to regulate the flow

Fig. 4—Iso-Therm core with axiliary condenser at the top to prevent loss of water or anti-freeze vapors

Fig. 5—Another design of core with auxiliary condenser at the top. A section of condenser shown at left

vent being on the cold side, the vapors are condensed before they reach the tank on the right side and consequently this loss of water and anti-freeze is avoided.

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A modification of the design shown in Fig. 2 is illustrated in Fig. 3. In this type, the tank C on the right has a vertical baffle which divides it into two compartments which are connected near the bottom by a hole in the baffle.

Purpose of the Baffle

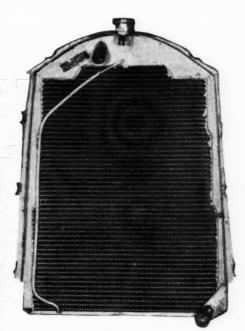
The object of the baffle in the side tank of the radiator is to reduce or regulate the velocity through the core of the radiator. The baffle construction is used on engines with pumps having too great a flow. This condition is usually found when the pump is placed at a low level in relation to the bottom of the radiator.

If the pump has a large capacity, the liquid will be withdrawn from the side tank of the radiator as fast as it leaves the core. The hot water which is carried over in considerable quantities from the engine with the steam, enters the left tank, Fig. 3. If the tank on the right side, C, which is connected with the pump inlet, is kept empty, the hot water flowing through the lower tubes of the radiator, will pass so rapidly that the drop in temperature through the core would be about 10 deg. This would allow the water to enter the cool side tank C of the radiator at too high a temperature which would result in vapor being lost to the atmosphere as this tank is vented to the atmosphere.

The size of the hole in the lower part of the baffle is so proportioned that the flow of water through the lower passages of the core is slowed down sufficiently to allow the temperature of the liquid to be reduced to a point where vapor will not be liberated in the cold side tank C.

The engine warms up very rapidly because of the smaller amount of water in the system and also because there is little or no circulation through the jackets until boiling commences. On a typical car, the water will reach the boiling temperature in about five minutes of driving at from 20 to 25 m.p.h. on a smooth level road assuming that the engine is started up after having been exposed to an air temperature of 10 deg. F. long enough to become thoroughly chilled. Under more favorable conditions, the warming-up period naturally is shorter

The speed with which the engine warms up makes it unnecessary to use



Typical Iso-Therm radiator core

the choke for such long periods in cold weather and also improves vaporization, both advantages tending to reduce crankcase dilution. Another advantage resulting from the quick warm-up is that the oil reaches a temperature that gives it proper viscosity more rapidly and the

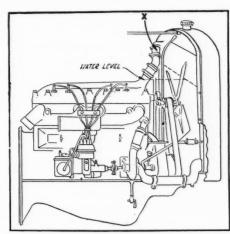


Fig. 1—Installation of Iso-Therm cooling system on a popular fourcylinder car

lubricating system commences to function with maximum efficiency sooner. Even if the engine has been operated but for a few minutes, the cylinder walls are

warm when it is stopped which prevents condensation of water on them with consequent rusting. Reduced dilution of the lubricant and better vaporization of the mixture resulting from the higher operating temperatures, naturally gives better oil and fuel economy.

Practical for Water Cooling

If the driver so desires, the system may be filled with water and operated as a water-cooled job.

Two other types of Iso-Therm radiators have been developed, but these designs are not being offered for replacement. One of these, which incorporates an auxiliary condenser at the top of the tank, is shown in Fig. 4. It will be noted that a horizontal baffle blocks off a number of the passages at the top of the core and also forms the tank D. The tank C is closed at the top in this design. The tank D is connected by a goose-neck to a horizontal, perforated pipe in the bottom of the upper tank which contains water to the level indicated in Fig. 4. The hole E in the gooseneck prevents syphoning of this water back into the

When driving under extremely adverse conditions such as traveling at high speed or climbing long mountain grades in hot weather with a following wind, there is a lag in the heat transfer from the hottest part of the iron to the water. Assuming the engine was operated under these adverse conditions at heavy load and was then stopped, there would be no air flow through the core and consequently the vapors would not be condensed. Due to the lag in heat transfer, vapor generation would continue for a minute or so and, if the vent pipe were open to the air, a small amount of liquid would be lost. With the auxiliary condenser shown in Fig. 4, however, this vapor is trapped and condensed in the cold water in the top tank except for a small amount escaping through the hole E. Of course, in order to force the vapor into the perforated pipe in the bottom of the top tank, sufficient pressure must be built up in the core to overcome the water head. In addition any vapor which might be present in the tank C under any condition of operation, must pass through the core passages blocked off by the horizontal baffle where a condensing action takes place. If any should reach the tank D, it can not escape except a small amount through the opening E. The possibility of loss of either water or alcohol is thus minimized.

Complicated Generators Simple in Principle

(Continued from page 15)

armatures in generators do not use coils with but one turn, but they use several turns, a simple representation of the way this is done being shown in this sketch (Fig. 3). Then to get more even current we find commutators in generators used on automobiles may have from 16 to 45 commutator bars so as to give smooth current, there being coils to correspond to the commutator bars, the

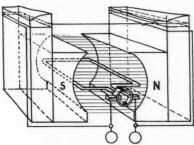


Fig. 5—For greater output, the practical generator is made with its magnetic field produced electrically

exact number of coils depending on the type of winding.

"Then the matter of magnetism is taken care of by doing away with the permanent magnet and using in its place an electromagnet or a field where one or more coils, taking current from the armature produce a strong condition of magnetism. The general idea of using several coils is shown in this sketch (Fig. 4), while this other one (Fig. 5) gives an idea of the way the electrically energized field is connected."

Checking Engine with Hammett Motor Tester

NE of the hardest jobs that confronts the repairman today is determining the cause of engine knocks and it would probably be astounding if we could know the amount of money spent annually for work that was not necessary.

The Hammett Motor Tester is designed to insure a greater degree of accuracy in analysis of the engine repairs needed, by reproducing for the customer the knocks he has been hearing, so that he as well as the mechanic may be satisfied that certain work is really needed.

Undue looseness in moving parts, combined with the stresses imposed by compression and explosion pressures is responsible for the noise made by one part striking another, which we commonly call a knock.

In the illustration it will be seen how the Hammett Motor Tester operates, for it works on the hydraulic principle, pumping air quickly to produce cylinder pressure or vaccum. By this means the piston is first forced violently in one direction and then in the other.

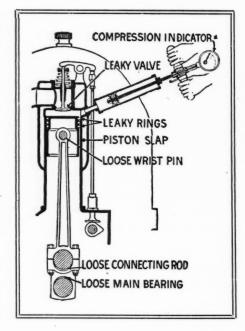
In using the tester all spark plugs are removed and the tester is applied at one of the spark plug openings.

Testing Compression

This is accomplished with the handle of the tester pushed down and turned to the right. The engine is then turned by hand and the compression shows on the gauge.

Testing Piston Rings

The engine is set on firing dead center in which position the valves are closed. The breather cap is then removed and the tester operated. If the piston rings leak the compression will flow by the rings into the crankcase and through the breather cap.



Method of using the tester to locate loose wrist pins, connecting rod or main bearings. For checking piston slap, the engine should be off center about 30 degrees

There are two causes for leaky rings. In one instance the ring does not fit the cylinder wall; the other the ring does not fit the grooves in the piston. If the compression is poor, regardless of the position of the piston, it shows rings do not fit cylinder walls. If compression is good while piston is moving up and is good while piston is moving up and is indicates rings do not fit piston grooves. This is due to the fact that the ring

changes from the lower to the upper side of the groove.

Leaky valves are checked by using the tester and seeing if air is blown out through the carburetor or through the muffler. Air through the carburetor would indicate leaky intake valves and air through the exhaust manifold or muffler would indicate leaky exhaust valves. If an exhaust valve gives trouble it may also cause air to blow out the spark plug holes in the cylinder that is on exhaust stroke.

Checking for Piston Slap

The engine should be turned about 30 deg. past top dead center, so that connecting rod will be at an angle. Working handle up and down will then make a clattering noise at every stroke if the piston is loose. This is due to the piston being forced first toward one cylinder wall and then against the other one. With engine on dead center and piston at top of stroke in firing position, the operation of the tester will produce a distinct knock if trouble is due to wrist pins. This knock is one that you cannot feel on the crankshaft by placing the hand on starting crank.

Connecting Rod Test

With piston at top dead center, place the hand on the starting crank and have someone work the tester handle up and down with a short, quick stroke. A loose connecting rod will pound the crankshaft as if it were being tapped by a hammer.

Main Bearings

When main bearings are loose the same test will result in lifting and lowering crankshaft. This is also checked by pushing on the starting crank and holding it while someone operates the tester.

DELCO GENERATOR

(Continued from Page 16)

charging rate it is a simple matter to determine which field is at fault. While running hot at 1,600 r.p.m., maximum output should be 12 amps. Should either field be open or cut out, and the other "O. K." the output will drop to 4 amps. Run generator in test bench at 1,600 r.p.m., lift 3rd brush. If out-put drops to zero the STABILIZING FIELD is open. It out-put does not change the THIRD BRUSH FIELD is open.

GENERATOR CHARACTERISTICS Rotation, L.H., Com. End

Performance Data—Gen. hot; add 3 amps. for cold test.

	Amperes	R. P. M.
Min.	5	800
Max.	12	1600
Average	10-12	

Third Brush Adjustment — LOOSEN COVER BAND.

MOTORING FREELY-5-6 amperes at 6 volts.

Max. Stall Current—15 amperes at 6 volts.

Brush Spring Tension—11/4 to 11/2 lbs. on each.

Stabilizing Field Test-1 ampere at 6 volts.

Third Brush Field Test—3.25 amperes at 6 volts.

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To Discuss Bus and Truck Problems in Boston

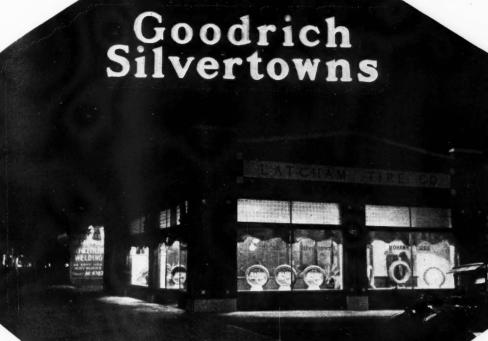
Problems in motor truck and motor coach operation and maintenance are to be discussed in forenoon and afternoon sessions of a three-day national automotive transportation and service meeting to beheld in Boston on Nov. 16, 17

and 18, by the Society of Automotive Engineers.

Addresses are to be made by recognized experts on the subjects of the coordination of motor coach systems and railroads, the operation and maintenance of motor truck and motor coach fleets, freight handling and store-door delivery by automotive equipment, handling of goods in interchangeable containers, cost of operating gasoline-electric vehicles, brake requirements of trucks and coaches, maintenance tools, and the relation of design to the power characteristics of the engine.

On the second day an inspection trip of great interest will be made to the maintenance plant of a local company that operates a great number of motor trucks.

Members of all societies and associations that are interested in the subjects to be discussed are to be invited to attend the technical sessions and a banquet. Novel Advertising Stunts Feature



Selling

Methods

DENVER'S REPUTATION as a "City of Lights" has been made more famous by the installation of a large electric sign on the roof of the building occupied by the Latcham Tire Company. The sign is 37 feet long, 20 feet high and contains more than 400 lamps



BILLBOARD ADVERTISING is the unique idea used with success by the Nash Motor Sales Co. of Chattanooga. The panel at the side listing the offerings is changed as the cars are sold.



RUNS ON AIR. This youngster, although a frequent patron of the Ventura, Cal., service station, spends little. His tiny car runs on compressed air, not gasoline.



THEY GO TO THE BONEYARD for parts of automobiles out of production at Lancaster, Pa. Morris Roseman started this "warehouse" 11 years ago when he began buying all the old automobiles he could get. The idea has been a success from the start.

May 20, 1926

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r Age

How to Handle Small Jobs Confronting Many Dealers and Service Stations

Edited by B. M. Ikert

T is generally recognized that motor vehicle maintenance work has undergone quite a change during the past few years tending towards the elimination of many involved operations that formerly tied up a car a good many days in the shop.

Today it is largely a matter of doing a lot of small jobs the time for which runs anywhere from 5 minutes to half an hour. It may be the installation of a headlamp bulb, tuning the carburetor, putting a new core in a tire valve, tightening a battery terminal, installing an oil cup or any of the hundred and one small jobs that every shop knows too well.

The uppermost question in the minds of dealers and shops that have installed flat rate is how to charge for these small jobs, or whether a charge should be made for them at all. There are those who say any job requiring up to half an hour to perform should be done free of charge, while other stipulate a minimum charge of 50 cents.

Both have their advantages and disadvantages. If no charge is made a shop might easily keep a mechanic busy all day doing work for which the establishment gets no money. Then it becomes a question as to whether or not this free work should be paid for by the more involved operations. In other words, charge a little bit more for the bigger jobs, usually only a few cents per job, and thus make up what on the face of it appears to be a direct loss on small jobs.

Again there are those who say the small jobs should be charged for. But here is where the rub comes in. Usually the customer waits while the job is done and when he is asked to pay a charge of 75 cents or so for a job requiring but 5 minutes to perform he brings out the old story of "robbers" again.

In the final analysis it probably must be left to the descretion of each institution. Many find it far more profitable to keep the good will of the customer by performing these small jobs free of charge rather than quarrel over a few cents.

Find Personal Contact Great Asset in Operations

"We regard direct personal contacts as one of our strongest assets in maintaining a growing business," said Howard C. Newhouse of Newhouse Service Co., 64-66 Howard St., Springfield, Mass. This concern does a large tire sales and service business and also has the agency for Watson's Stabilator for that county.

"As our business is conducted by three brothers we are particularly well situated to keep close relations with our customers and we find that it pays to do so. One of us usually meets the customer when he comes in and steers him

Road Calls at a Fixed Price

Flat rate is being extended to include road service. One Chicago dealer now sends out a road car to the stranded motorist within a radius of 5 miles at a flat rate of \$1.50. No motorist but what would be glad to pay \$1.50 under such conditions when he knows help is on the way. It would seem the small town dealer would do well to advertise in his local newspaper that he had a road service at a fixed price.

Car elevating equipment at the present time seems to be in the minds of many shop operators. Pits are not so popular as formerly and in their place we now see many excellent pieces of equipment designed to quickly and safely elevate a car for washing, oiling or repairing. In this connection it would seem the elevating devices that require minimum space such as overhead carrier systems, pneumatic lifts, hydraulic apparatus, etc. have much to recommend them.

Flat Rate Brings New Spirit

Payment of mechanics on a flat rate basis has brought about an entirely new feeling in many a motor car establishment. It has brought about a better feeling of co-operation between the sales and service departments. The new car salesmen are enthusiastic because since the establishment of flat rate compensation to mechanics the customers praise instead of criticise the service departments. In many cases dealers say the old complaints against the service department have been entirely eliminated. Flat rates to both customers and mechanics have been the salvation of many an establishment.

Everyone knows that under the flat rate system it is almost a pleasure to take an order for a repair job. The shops know when the work will be completed and therefore have a guide as to scheduling future work. From proper charts the foreman knows almost to a minute when a mechanic will be through with the job on which he is working.

FLAT RATES

for

Oldsmobile Steering Gear Operations

Motor Age's Flat Rate Forum No. 65

Offic		Ti	me
Des	ignation	Hrs.	Min
Fro	up P-1		
1	Adjust steering gear		1:
2	Install new steering wheel		
			13
3	Install new Pitman arm		30
4	Install new steering post jacket	2	13
5	Install new steering worm gear		30
6	Install new Pitman arm shaft	2	3
7	Install new Pitman arm bushings	3	13
8	Install new steering tube worm	9	1
9	Install new adjusting plug bushing		4
10	Install new steering tube		
	install new steering tube	3	13
11	Install new worm thrust bearing lower		4
12	Install new worm thrust bearing upper	3	
13	Install new stearing jacket bushing	*2	:30
14	Install new steering tube upper bushing	:2	
Gra	up P-2	.,	
1	Install new drag link		.33

to the particular department that may serve his needs. We find that most of our customers form the habit of inquiring for one of the heads of the establishment, but that does not bother us in the least. We answer his inquiries and head him to the right part of the establishment without loss of time. This gives our patrons the conviction that we are interested in them and interested in maintaining an organization that is on its toes to meet requirements.

"The fact that we conduct a storage garage in connection with our other business serves, of course, to widen the range of these contacts and increase our sales."

Offer of "100 Gallons of Free Gas" Helps Move Cars

The Worsham-Buick company of Dallas, Tex., sold a good number of reconditioned automobiles, cars which had been taken in on trades for new Buicks, by advertising the exact condition, price and terms of each car offered and announcing that 100 gallons of gasoline would be given free with each of the reconditioned cars purchased.

These reconditioned cars carried service guarantees for 30 days. The sale was advertised in four daily papers over a period of two weeks.

' She READERS' CLEARING HOUSE

Questions And Answers



On Dealers Problems

Heavier Pistons Affect Acceleration

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Q.—In regard to an F. B. Chevrolet. 1921 model car which has aluminum solid skirt piston, is it advisable to use cast skirt piston, is it advisable to use cast iron skeleton pistons as used on a 1926 Chevrolet. What effect would it have on the engine? Are the piston pins the same diameter? What clearance should these skeleton pistons have? Are these skeleton pistons as heavy as solid skirt aluminum pistons?—Pennsylvania Reader.

It is possible to use the cast iron skeleton pistons, but as these are somewhat heavier than the aluminum it will affect to some extent the operation of the engine, giving poorer acceleration and more vibration at high speed. This would be true with any engine where pistons are used which are heavier than those for which the engine is designed. The cast iron pistons, however, are the right size and the piston pin hole is the same size, that is 27/32 in.

The clearance should be .003 in. which will be the same for the cast iron and is the clearance that should be used if a split skirt type of piston were used. This latter type might be preferable as it would give you the light weight while the construction would make it possible to fit the piston with a clearance of .003 in.

Q.—Would it be advisable to remove the baffle plates? What use are they?

On this engine they are intended to prevent excessive amounts of oil getting on the cylinder walls. If you remove them there is a good chance you will be troubled with fouling of spark plugs and excessive oil consumption.

Q.—This car seems to run hard. Brakes do not drag and everything seems O. K. but car does not coast freely.

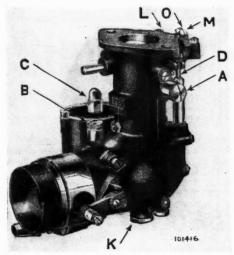
The trouble is most likely to be in the brakes. To make sure about this it might be advisable to try loosening the brake shoes and then testing the car by pushing it on the floor. You might also test by jacking up the whole rear axle and turning the wheels by hand both before and after the brakes are loosened. About the only other possibility would be trouble in the axle or portions of the transmission. If this should be the case the only thing to do would be to disconnect the axle from the transmission and then see if you still have difficulty in turning the rear wheels.

WANTS A NOISY CAR

Q.—We have a popular make of car which has a Northway six engine 213/16 in. bore. We would like to know how We can rig up the exhaust pipe to make a loud hollow noise such as that on a racing car or any other way to make that loud hollow "bark."—Fred Tessman. 1224 K Street, (rear) Sacramento, Calif.

Perhaps the least expensive method for securing the noise desired is to braze to the present exhaust pipe a piece of carburetor hot air flexible tubing of approximately twice the diameter of the present exhaust pipe. The tubing should be fastened to the exhaust pipe at a point not more than one foot to the rear of the exhaust header. In other words only about one foot of the original exhaust pipe should be utilized while the remainder of it will be taken up by the flexible tubing.

This method requires that the muffler be discarded which means that in certain localities you will be disobeying the law. To get around this it will be possible to put a Y or V fitting in the exhaust pipe about a foot from the header and equip it with a form of butterfly that will allow you to by-pass the gas into the muffler when necessary or allow it to go through the flexible tubing when



Carburetor Used on 1922 Studebaker

TO RESTORE VALVE SEATS BY WELDING

WELDING
Q.—We have a 65 h.p. 4 cylinder, I. head engine in which some of the valve seats are worn down too deep. In other ways the cylinders are in good shape. We would like to know if it would be practicable to fill the seats up with either an electric or other type of welding outfit without dissembling the engine. If so, what equipment would you recommend to do the work. We would also like equipment that is good for general garage work.—Patterson Bros. Garage, Ellsworth, Kans.

In the average garage where welding is done we often find the oxy-acetylene equipment commonly used. However, any good method of welding should take care of the situation. We are giving you by separate letter the names of some concerns making welding equipment.

Checks Float Level and Doubles Milage

Q.—We have a 1922 Big Six Studebaker which has been making only 6 miles per gallon. Lowering the float level 1/32 of an inch gave an additional five miles, so now it makes eleven miles per gallon. Other garages have been unable to solve this trouble and I have been the first to make an improvement in this car. I am not satisfied yet, however, with my efforts and would appreciate suggestions for further improvement.—W. B. Olson, Olson's Garage, Middletown, N. J.

To check the float level, remove the can and lift the needle valve. Use 2

cap and lift the needle valve. Use a scale in measuring the amount of lift. It should be from 1/16 to 5/64 inch. Besides checking upon the float level, you might check up on the carburetor adjustment. Adjustment A is for idling. As it operates on the air it gives a richer mixture by screwing in or to the right and a leaner mixture screwing to the left or counter-clockwise.

When engine is idling properly there should be a steady hiss in the carburetor. Screw B controls the flow of gasoline at medium and high speed. Turning to the left gives more gasoline and to the right gives less gasoline. Other conditions required for good economy are good compression, and a spark which is properly advanced.

WANTS A CAM TESTING TOOL

Q.—Please advise where we can find a tool for testing Ford camshafts. We are looking for a tool that will check up the respective position of each cam. We would also like to know where we can obtain a crankshaft tool for determining if the connecting rod journals are true and parallel with the main bearing journals.

—San Benito Motor Co., San Benito, Tex.

We do not know of any such tools and

hardly believe they are necessary. The cams can be checked indirectly by comparing the valve timing in the different cylinders. For example, if you have the same clearance between push rod and valve stem in all cases and then time on the No. 1 cylinder you can check No. 2, 3 and 4 cylinders to see if the timing is the same. If so, it proves that the cams are O. K.

The way crankshafts are ground we do not believe there is much chance of the crank pin being out of parallel with the main bearing journal. There is a chance, however, that the crank pins and journals will wear egg shaped, or eccentric and for this reason the crankshaft should be checked either with micrometers or with a dial gage. We are, however, giving you names of three concerns which make equipment for Ford service stations and this information will be sent by let-

May 20, 1926

Planning Your New Building

A Building With Large Showrooms

Q.—We note with interest the various suggested layouts for new buildings in a new building and would appreciate suggestions. We are enclosing a rough sketch showing about what we think we would like. The size of our lot is 162 ft. front by 120 ft. deep to alley. We are particularly interested in having an attractive display of new and used cars and a modern service and repair department.

We have a very large repair business and carry a complete stock of parts and accessories so would require a large stock room and also have a large number of requests for car washing. In other words the service end of this building is an important part in our business and we desire a lay out that will enable us to handle this efficiently and quickly.

It is our thought that to erect this building in two units might reduce the cost and accordingly have planned as shown in the sketch. Would like to receive your suggestions as to the feasibility of this. In fact will appreciate any suggestions you may have to offer that will enable us to have one of the most modern layouts.—Reuteler-Dorsch, Inc., North Avenue at 28th St., Milwaukee, Wis.

While we believe that there would be no great saving in building your proposed sales and service station in two units, the size and shape of your lot naturally makes it easier to plan the building this way. Dividing it through the center with 60 ft. in front and 60 ft. in the rear, gives a very good space for service, along the alley side where there is good light while the front section can be used very nicely for two showrooms, one for used cars and the other for new ones.

We have arranged a balcony along the rear side of the showroom to be used for general offices, ladies waiting room, private office and office toilet, while the salesroom can be arranged under the balcony, separating the space for used car sales from that alloted to new car sales.

There is a large open space just inside the service entrance which would be very valuable in the handling of cars in and out giving plenty of space for the service salesman and preventing congestion even should several cars come for service at once.

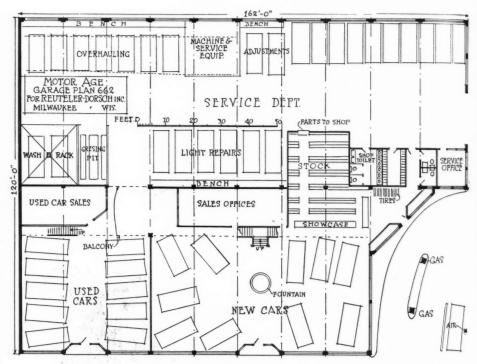
The only shortcoming seems to be the limited space for storage and the only way to increase this space would be to cut down the amount of space allotted to repair work. Possibly another method would be to build a balcony over the storage space, that we have shown, installing upon it the parts department, shop toilet and locker room so that this space could be devoted to storage. Another location for this balcony would be directly above where the stockroom now stands. Here it would be only a continuation of the balcony used for office

purpose. It might, in fact, be found that the office balcony was big enough to accommodate the shop department as well in which case no shop balcony would be necessary.

We have provided the ordinary kind of wash rack, a platform with drain, but the

By Tom Wilder

operation could be speeded up by the use of some of the newer washing equipment, now on the market.



This plan follows the general arrangement of one of the latest and most approved Chicago dealer buildings except that it has two stories in the service section

= NEADERS' CLEARING HOUSE =

LEGAL QUESTIONS ANSWERED

By Wellington Gustin

MUST RETAIN POSSESSION

Q.—Please advise me as to the lien law against with reference to automobile repairs. I have received contradictory advice from several lawyers in Madison on whether or not a lien can be put on a car after it has been delivered to owner within a specified time. Also the length of time which can elapse before same is out.—Art Brissee, Art Brissee Auto Repair Co., Madison, Wis.

The Wisconsin statutes in Sections 289.41 to 289.47 inclusive give the repairman and garagekeeper a lien for repairs and storage of automobiles and for repairs of detached automobile accessories. The law provides that the repairman or garageman may retain possession of the property under the lien

until his charges are paid. The repairman is given a lien superior to any prior lien of chattel mortgage or conditional sale covering his charges of \$75.00 or less, but inferior to them in greater amounts. Now the lien is one of possession giving a right to sell after three months, if charges are under \$100. Where charges are over \$100 then action for sale must be taken in proper court having jurisdiction. Since the statute makes no provision for recording or filing of lien claims it appears that retaining possession is necessary to preserve the lien. The garagekeeper's lien law provides that he may sell the accessory on which he holds lien after six months. But he must retain possession.

Answers to Readers' Questions

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Q.—There is a concern located in Brooklyn, New York, which has a process for removing paint and repainting motor cars. We understand that they now have plants operating under their system in Cleveland, Bridgeport, Philadelphia, Baltimore and one at Scranton, Pennsylvania.

one at Scranton, Pennsylvania.

They have been wanting us to put in such a system to use for cleaning off old paint. Their repainting process includes the use of four coats. Can you get us some reliable information as to the durability of this material and the suitability of their process?—Reliable Auto Paint Company, by A. A. Stephens, manager, 1205 Penn. Avenue, Joplin, Mo.

We feel that the general method referred to is satisfactory. If we are correctly informed it includes a method of spraying the car from a steam jet. The nozzle employed has a double opening and one connection goes to an alkali solution. Solutions sometimes used are sodium hydroxide and potassium hydroxide. There are also a number of patented solutions which are used. alkali and the steam combined at the nozzle are sprayed on to the paint surface. Care must, of course, be used to keep the steam spray from coming in contact with top or upholstering which would be either discolored or damaged by the alkali. We have no knowledge as to the repainting process recommended by this concern but as you have been in the painting business you can probably judge of this for yourself.

CONTINENTAL ANSWERS THIS ONE

Q.—We have a model 8-A Continental engine used in an ambulance. It burns out the connecting rods when you drive it over 35 miles per hour. The car has been driven 2300 miles and has burned out three connecting rod bearings on three different occasions. The oil pump and crankshaft seem to be all O. K.—L. J. Beimer, Goodrich Garage, Marlin, Texas.

This matter was taken up with the Continental Motors Corporation, Detroit, Michigan, and they have given us the following information which we know our readers will greatly appreciate.

"This particular motor is very thoroughly lubricated and has a force feed lubricating system throughout. connecting rod is lubricated by means of a lead from the center bearing, or from the main bearing, opposite the connecting rod. If your reader has experienced this trouble with only one connecting rod, we are led to believe that the oil lead in the main bearing opposite this particular rod has been clogged in some manner and does not permit enough oil to get through the hole in the crankshaft to the rod. In this case, it will be necessary to remove the crankshaft, or let it down sufficiently to clean out the hole from the gallery line in to the main bearing.

To definitely determine if this is the cause of the trouble, it would be possible to operate the motor, with the oil pan off, by adding a small piece of rubber hose to the suction line of the oil pump, allowing this suction line to drop into a pail of lubricating oil. By operating the motor slowly, you could observe if the oil is flowing freely from this particular connecting rod bearing, and the main bearing opposite the rod.

If your reader will look along the gallery line side of the crank case he will find four ½ inch pipe plugs. Remove the pipe plug opposite the main bearing giving the trouble, and the lead can be cleaned out by means of a piece of wire, or small drill rod.

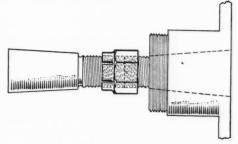
If there is no oil stoppage, we would suggest that you have him check the crank pins of the crank shaft and see that they are perfectly round and smooth. It is just possible that he has endeavored to fit a rod bearing to a crankshaft which is considerably out of round, and this will only result in the bearing pounding out, at speeds to exceed 35 miles per hour."

SHOP KINKS

That have been Found Useful

A Hammer Operates This Puller

Here is a method of removing rear wheels on cars such as Ford and Chevrolet. The nut is backed off until only two or three threads are left engaged with the thread on the axle shaft. A piece of old shaft is then used with the threaded end screwed into the threads of the nut which extends out from the axle shaft on the car. The stub shaft is then screwed in until it strikes hard against the other axle shaft. Striking the end of the stub shaft with a heavy hammer or sledge will easily remove the wheel.—Frank Sinka, Route 3, Algoma, Wis.



Readers of Motor Age are invited to submit ideas that they have found useful in doing some particular service job in the shop in a better or quicker way. For each one published \$2.00 will be paid. When ever possible the idea should be accompanied by a sketch or diagram from which a drawing can be made.

An Old Air Starter and Its Principle of Operation

Q.—Would like to know what cars had air starters as standard equipment and also a general idea of how these starters operated. Did the Chalmers or Stevens Duryea ever have this starter as regular equipment.—Ted Knudsen, 100 Sibley Street, Hammond, Ind.

In the Motor Age specification tables for 1913 there were quite a number of cars listed as having air starters. Among these cars were the Austin, Chalmers, McFarlan, Oakland, Pierce Arrow and Staver. The system used in a number of these cars was to operate the gasoline engine just as if it were a steam engine except that compressed air instead of steam was the motive power. To accomplish this it was necessary to have an air compressor of some sort which operated when the engine was running, the air being stored in a tank.

Rotary Valve Used

It was also necessary to have a rotating valve which would be so timed as to admit air to the proper cylinder just as the piston in that cylinder was ready to go down on the firing stroke. Accordingly instead of having an exploding charge of gas drive the piston downward the compressed air admitted to the cylinder would perform the same function. One of the present editorial writers of Motor Age was at that time connected with the Staver Company and made all of the drawings for the air starter. This starter had a great deal of power and worked very well except on rare occasions when the engine happened to get on dead center and then if the engine were pushed off of center by means of the crank it was possible to use the starter again.

The fact that the electrical system of lighting was most suitable and most convenient was perhaps a factor which contributed to the elimination of the air starter. Another difficulty was that of maintaining air at high pressure on account of leakage developing at joints and connections.

CHEAP OIL FILTER WANTED

Q.—Supply detailed instructions for making filters for use in cleaning sediment out of old motor oil.—Smith Chevrolet Company, Inc., 1554 Franklin St., Tampa. Fla.

We are publishing this request in the hope that some of our readers will come to your assistance and will forward their information to the Clearing House Editor. We have at present no information along these lines. Expensive equipment is available for filtering and purifying old engine oil, but it seems to be necessary to do this on a quantity basis.

Clearing Up Electrical Troubles

Things Worth Knowing About Battery Charging

Q.—How long should it take to charge a discharged 6 volt battery and at what rate should it be charged?—Marrowbone Garage, Marrowbone, Ky.

If a battery has been left in a discharged condition for any length of time it will be sulphated. This means that current must be run through the battery at a low rate that will not cause the battery to overheat. In a good battery shop a thermometer is used and is inserted in the acid to check up the temperature of the cell. The cell temperature should not go appreciably over 100 deg. Fahrenheit, although some authorities say it may go as high as 110 deg. Fahrenheit.

If a low charging rate causes the battery to get too hot the charge should be discontinued until the battery cools down. If a battery has been just freshly discharged and has not been allowed to stand in a discharged condition, then it is possible to calculate the amount of current needed to bring it back. If the battery is rated at 80 ampere hours, it will require about 100 ampere hours to recharge it. This means that a five ampere current would have to flow for 20 hours. Nearly always batteries which are brought to the service station have been slowly discharged or have been allowed to stand for a greater or lesser length of time, so that in most cases the time required is longer than would be figured in the example given.

Q.—1s 32 volt current better than 110 or 220 volt current for charging batteries."

. It does not make any difference. If you have a 6 volt battery charging on 32 volts, it is necessary to use enough resistance to waste about 26 volts. If you have a 6 volt battery charging on 110 volts, it is necessary to use enough resistance to use up the other 104 volts, while with 220 volt current, you would have to waste current through the right resistance which would use up 214 volts. From an electrical standpoint it does not make any difference, but from a financial standpoint it makes a great deal of difference and you should always use a voltage which is just a little higher than the battery voltage figuring about 8 volts for each 6 volt battery to have enough extra voltage to force the current through the cells.

OIL CAUSES SQUEAK

Referring to trouble with generator brush squeak in the February 4th, 1926 issue of Motor Age. At one time I had the same general sort of trouble with an American Bosch generator on a six cylinder Dort car. In this particular case I found it was due to engine oil leaking through the generator from the timing gear case. I cut a hole in the

lowest part of the commutator cover and put a coarse brass strainer over this hole. This permitted oil to drain out and prevented its getting on the brushes where it had caused a glazed condition which was responsible for the squeak.—L. S.

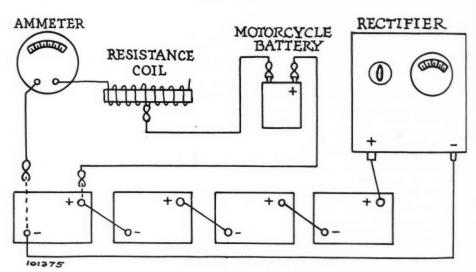
RESISTANCE AND 6 VOLT COIL USED ON 12 VOLTS

Q.—I have a Bosch ZR4 dual magneto, which I wish to put on a Dodge in connection with a two spark cylinder head. Magneto was taken from a Case car and the coil is designed for 6 volts. Would it be safe to use this coil on 12 volts if I put a resistance in series with the coil primary and the battery. I have plenty of 12 volt coils such as Delco and North East which I can use in place of

More Money for the Battery Shop

Q.—Enclosed you will find a drawing which will enable a good many Tungar charging stations to make a few more dolars with very little investment. I know that a good many of them turn down small batteries which they can't put on the series line, unless they have several of them almost alike. When I have about five batteries on the line, I pick out the best one of them and hook up my motorcycle battery in parallel with it and collect 75 cents, the price for a large one for charging this small battery. It is but little trouble to do this and as you see in the drawing I have a clip running along an iron wire resistance coil and I can connect up to any battery and let the proper current, usually one to two amp. trickle through.

The scale of the ammeter used in series



Reader's method of using the regular charging line for a motor cycle battery

the regular 6 volt Bosch, if that would be better.—S. W. Moebius, Frisco, Utah.

We assume this is a combination coil and switch on which you have a magneto and battery position, also a start and stop position, obtain by means of a small button in the center of the switch. If so, you would find it easier to use this coil. We believe it will be satisfactory to use a resistance. In checking up the value of the resistance, we suggest connecting the coil to a 6 volt battery to see how much current it will take. This test could be made without an interrupter and with the center button turned so that you do not get any vibration. Suppose the coil draws 5 amperes. Then connect a resistance in series with the coil and connect it to a 12 volt battery. Now vary the amount of resistance until the coil again draws 5 amperes on the 12 volt battery. We believe you will then find that the operation is satisfactory on 12 volts.

with the motorcycle battery should be about zero to four amp. The resistance coil is mounted on a piece of slate and wound on a tube covered with asbestos. This little switch board with the ammeter and resistance coil is made portable and is also very handy around the shop for various test work.—Herman Henssler, 926 N. 13th St., Philadelphia, Pa.

This layout seems to be worth while. We are accordingly showing a diagram which reproduces the drawing that you sent to us, because we believe other Motor Age readers will also be interested. When the Tungar rectifier shows a current of 6 amperes going through the batteries and the ammeter in series with the motorcycle battery shows 1 amp. then it means that the battery across which the connection is made is getting 1 amp. less or 5 amp. If the connection is made across a battery which is nearly charged it is evident that more money can be made with but little extra expense as Mr. Hennsler points out.

Answers to Readers' Questions

Three Methods of Fitting Oil Rings

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Age

Q.—How is excessive oil pumping prevented by drilling holes in the bottom ring groove? What is the best method of fitting piston rings?

We are showing three sketches in one illustration. The sketch at the left shows a method commonly used. The lower corner of the lower ring groove is beveled off with a file or by turning the piston in a lathe until you have a flat corner about 1/8 in. wide. Then ten or twelve 1/8 in. holes are drilled at an angle through the piston. An ordinary ring may be used. This ring when moving down along the cylinder wall scraps oil into the space formed where the lower corner has been beveled off. The oil then flows through the drain holes and drops back into the crankcase. The method shown in the center sketch is similar except that the shape of the groove around the piston is different. This method is somewhat better because it gives a bigger surface on which the piston ring may be supported. The method at the left has the disadvantage that there is not so much surface to support the piston ring and it soon gets loose in the groove.

The method at the right is still better, but requires a special type of oil drain-

OIL DRAIN DRAIN
CYLINDER WALL

Sectional views showing piston construction at lower ring groove

ing piston ring. This ring must either have slots through it or notches at the top or bottom so that in some way oil can get in behind the lower piston ring. Holes through the back of the ring groove then permit the oil to drain into the crankcase again.

In fitting piston rings, each ring should be fitted to the ring groove so that it will just roll around in the groove without binding. It should have no perceptible up and down play or oil pumping will result as oil will work in behind the ring and then work up on the other side.

The ends of the ring should be filed off so as to give the right clearance. This will vary slightly, but it would be approximately .003 in. for the bottom ring, .006 in. for a middle ring and .009 in. for a top ring. The ring should be put inside the cylinder, one way of doing this being to put a piston in the cylinder up-side down and then put the ring in so that it rests on the skirt of the piston at a point about 1/2 in. from the top of the cylinder. This prevents the ring from being cocked in the cylinder and gives you an accurate indication. A thickness gage can then be used to check the clearance at the ends of the ring.

The Size of an Oversize Piston

Q.—I understand that the bore of a Ford engine is 3.75 in. Would a .005 oversize piston measure exactly 3.755 in.?—M. T. Steffy, 93 N. Forest Ave., Downers Grove, Ill.

No. You have the clearance to figure on. For example this piston will require clearance of about .004 in. The oversize cylinder bore would then be 3.755 in. while the oversize piston would be 3.751. In each case the cylinder and piston would be .005 in. oversize. You can get some further information on this by referring to page 23 of your Feb. 18, 1926, issue of Motor Age where sizes were given for Hudson pistons.

SCORE AFFECTS IDLING

Q.—Why does the front tire on a car wear in spots and ridges having high and low spots?—Willard Moody, St. Charles,

Wearing at certain points more than others may be due to inequalities in the tire or it may be due to imperfect operation of the wheels. If an axle is bent or if a wheel wobbles or if front wheels are not properly lined up there will be abnormal tire wear and it may show up at certain spots, depending on the way the wheel operates.

Q.—We have a 1926 engine in which valves have been ground and carbon cleaned. New coil points have also been used. It will not idle smoothly and it seems to get too much gas. If carburetor setting is made too lean the engine will stop. One cylinder is scored slightly.

The hardest test on an engine is to get it to idle properly and one way that a scored cylinder first shows up is by failure of the engine to idle smoothly. This is due to the fact that the bad cylinder loses compression and has less power. It does not draw the gas in properly and then it loses part of its charge and has a weak explosion. We assume this is a Ford car to which you refer. If so, you will get improved operation by using a hot spot manifold or by installing a carburetor with which a hot spot manifold is included.

Lengthening the Stroke of Dodge Engine

Q.—Your letter of December 30th at hand and your information has been a great benefit to me as it has saved me quite a lot of money and experimenting. There is one more question I would like to be enlightened in. Would you advise using Dodge block cut down to a 3½ in. bore or would you advise using a regular Dodge block using a 3% in. bore? I am having a special circular counterbalanced crankshaft made for this job which is to be used for ½ mile dirt track racing.—Merle Nelson, 329 W. Reynolds Street, Springfield, Illinois.

If this car is to be used for dirt track racing and you are having special shaft built we would suggest that you retain the 3% bore but lengthen the stroke to give a better bore to stroke ratio. We do not know whether or not the stroke could be increased to any great extent as this will depend upon the layout of the crankcase and the bottom of the cylinder block. If you could add one inche to the stroke without having the connecting rods interfere with the crankcase and cylinders we would recommend this in preference to increasing the bore.

Q.--Advise where I can have a set of tubular steel connecting rods made for this job.

Any good machine shop doing experimental work could construct the rods for you. It is possible that some money could be saved, however, by using connecting rods of a size as utilized on some car now in production. The racing cars built by the Miller Engine Works, Los Angeles, California; the stock car built by the Duesenberg Motor and Automobile company, and the Willys Knight six, all use tubular rods. Although we do not have dimensions covering these rods we believe that you can secure same and further information regarding prices by communicating with the manufacturers.

DISCONNECTING BUICK UNIVERSAL

Q.—In removing transmission and clutch from a Buick car, is it necessary to slide back the rear end or can it be done by breaking the universal joint?—Chicago Subscriber.

It is necessary to take out four screws of the universal joint and then remove the saddle caps which hold the rear axle to the rear spring. The axle can then be drawn back which will permit breaking the joint at the universal.

Repairing Steering Gear While On the Car

Q.—Give procedure for installing half nut in Jacox steering gear, particularly 1925 Buick, Master Six.

The steering wheel is first removed and the mast jacket is lifted up out of the way. The large adjusting nut at the base of the mast jacket is then backed off, after which the half nuts may be removed, and new ones installed.

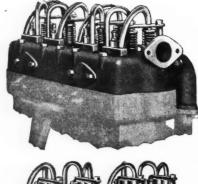
An Interesting Group of New Products

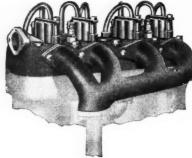
Improved Bosch Nobattry

IMPROVEMENTS that have been incorporated into the Bosch "Nobattry," a product of the American Bosch Corporation, Springfield, Mass., are said to furnish not only a noiseless B battery eliminator, operating from the house current but to provide a variable plate voltage up to 150 volts. The plate voltage on the "Nobattry" may be varied to meet the needs of a set drawing 90 volts, or of a set requiring 135 to 150 volts. It is pointed out that the trend in radio sets is in the direction of increased voltage, many of the sets to be announced later in the year to demand 135 volts or better. The object of the provision of a variable plate voltage up to 150 volts in the Bosch Nobattry is said to be that of anticipating this trend and supplying the radio owner with a device suitable for the radio set he owns at present, drawing probably 90 volts, and also suitable for a set he might decide to buy later which will demand a much higher volt-



Bosch Nobattry





"Akron-Hed"—(Top) Intake side; valve spring sleeves removed. (Bottom) Ex-haust side.

"Akron-Hed"

A NEW overhead valve head for Fords is being made and marketed by the Williams Foundry & Machine Company, Akron, Ohio, under the name, "Akron-Hed." Some of the advantages claimed for this device are increased power, speed and pick-up, but the outstanding feature is the system employed for valve operation. The valves are operated by annular balls, close packed in grease in seamless operating tubes which are equipped with grease clips so that new grease may be shot easily through the tubes. It is said this system is quiet-distributing wear over large areas of tubes and balls instead of concentrating wear at three points of the usual rocker arm mechanism. Rocker arms, rocker arm bearings, rocker arm ball joints, shafts and stand are entirely eliminated, allowing ideal locations for valves and spark plugs. The "Akron-Hed" fits old and new Fords without alteration. The retail price is

Four-in-One Jack

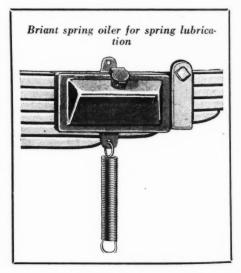
FOUR features of utility incorporated in the Four-in-One Jack, made by the Four-in-One Jack Corporation, 1819 Broadway, New York, render this device valuable for use as a jack for elevating a wheel, as a mud hook when the car is mired, as a lock and protection against theft and as a storage jack. The outfit consists of a socket or slot permanently attached to the inside of the wheel and a movable jack which is inserted into the socket when needed. For instance, when it is desired to store the car and leave all four tires off the floor four of the jacks are slipped into position and the car is moved backward or forward until the weight of the car is resting on the jacks, with tires free. Applying one jack will raise the car sufficiently to change a tire, while one or more will create "grab" when the car is stalled in mud. In using the jack as a lock a padlock is placed in a hole provided for the purpose, thus setting up a handicap for the thief, as the going would be diffcult and slow for him. The complete outfit costs \$5.

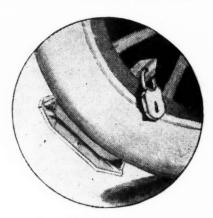
Auto Vita Magic Cleaner

A DDED to the line of Auto Vita products offered to the trade by the Auto Vita Manufacturing Company, 5637 Harper avenue, Chicago, is the Auto Vita Magic Cleaner, for use in cleaning the car's upholstery. This preparation is claimed to give highly satisfactory results in removing grease and dirt and preserving spick and span appearance of the cloth The makers say it restores the original color of the fabric, requiring no scrubbing or rinsing and that it evaporates quickly. Auto Vita Magic Cleaner comes in cans of two sizes, pints and 50 pound cans. Pint cans list at 45 cents each.

Briant Spring Oilers

BRIANT Spring Oilers, made by the Briant Specialty Company, Indianapolis, Ind., consist of an attachment containing a felt oiling pad which is held against the spring leaves by a coil spring that passes around the car spring. The makers say these oilers will not lose off when the going is rough, that they will not slip or rattle. It is claimed that the lubrication is constant and without loss of oil. One set of these oilers is required for Fords and two sets for other cars. Price per set of four is





Four-in-One jack as a lock



Four-in-One jack as used for storage

NEW ITEMS OF SHOP EQUIPMENT

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 $T_{
m by\ the\ Bear}$ Combination aligner made by the Bear Mfg. Co., Rock Island, Ill., consists of the regular Bear automatic wheel aligner and the attachments necessary for lining up axles. In lining up wheels the wheel aligner only is used, but where axles are straightened the attachments are used. When lining up the wheels the aligner automatically registers on the dials the exact amount of toe-in or camber. When lining up the axles it also automatically registers on the dials showing the exact degree of pitch or angle of both spindle bolts or king pins in the axle. Two information charts are furnished, the one on wheel alignment showing the correct pitch and toe-in on both high pressure and balloon tire equipment on practically all cars. The chart on axles shows the degree of pitch in the king pin or spindle bolt. Since the specifications vary greatly the charts are valuable and necessary when using the combination aligner. dealers who already have the Bear aligner need only the axle aligning attachments. Prices are as follows: Wheel aligner only, for Fords, \$15, and attachments for the latter \$12.50. Standard aligner for all cars \$17.50, combination standard aligner and axle attachments,

Protects Fine Tools, and Prevents Loss

The handy steel tool crib made by the Lyon Metallic Manufacturing Co., Aurora, Ill., is a mighty practical headquarters for drills, reamers, punches, jigs, dies, wrenches, and all other machine tools. It has boxes for nuts, bolts, washers and small parts, sloping shelves for the cutting tools and compartments and shelves for every size of tool under 3 ft long. Saving the loss of a few fine tools a year will pay for this piece of equipment.

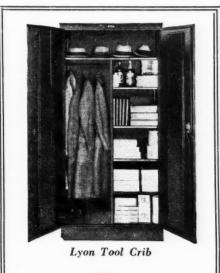
National Electric Twin Tube Vulcanizer

This vulcanizer requires less than one square foot of space and comes with 6 ft. of cord and attachment plug. A thermostatic control takes care of the right amount of heat and it is said that it requires but 5 min. to bring the plate, made of aluminum, to the correct heat.

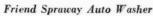
The clamps are attached to the plate by a standard in the center of the vulcanizer. The shipping weight is 16 lbs. and the price is \$18. It is made by the National Machine & Tool Co., Jackson, Mich.

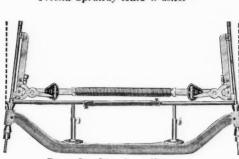
Friend Spraway Auto Washer

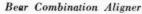
The Friend Mfg. Co., Gasport, N. Y., is manufacturing washing equipment which is known as the Friend Spraway Auto Washer. The pumping unit consists of a high pressure direct plunger pump, driven by either a gasoline engine or an electric motor and together with the transmission are assembled in one unit. Standard equipment includes two high pressure hose lines and two "Friend Patent Angle Spraguns." These guns are designed to produce any kind of stream, fine or heavy. Price without motor \$400.



FUEND SPRAWAY WASHER







Weidenhoff Constant Potential Battery Charger

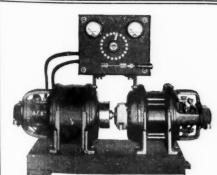
Joseph Weidenhoff, Chicago, has just announced a new development in Constant Potential for Battery charging incorporating a three-bearing type motorgenerator, a standard 40 deg. motor connected by a solid coupling to a specially constructed C.P. Generator, the two units mounted on a special hot rolled steel base to insure alignment.

The commutating pole is an auxiliary pole placed midway between the main poles and it functions by holding the neutral or commutation plane in a fixed position with relations to the brushes at all loads. This permits using just one half the brush area that would otherwise be required.

The Weidenhoff Constant Potential cannot reverse under any possible operating condition, it is stated, and should the power fail any ordinary battery line will keep the machine running for a number of hours, or until the live current is again restored, at which time, the machine will begin to charge again without any attention whatever from the operator.

The charging panel is equipped with heavy duty double spring clip switches, mounted direct to extra heavy bus bars. A third bus bar is connected through a 75 ampere meter, mounted at the center of the charging panel on a swivelled base which permits the meter to be moved with dial facing in any direction. This meter gives the amount of current taken by each individual battery when put on charge and will show up a defective battery at once. This will also indicate when a battery is fully charged, and also locate a bad connection, or any other trouble that may occur to a battery while on the charging bench. There are new ideas in regulating features giving perfect voltage control with out the aid of any outside device of any kind.

The Weidenhoff Constant Potential comes in various capacities for shops of all sizes and requirements, from the small shop requiring only 100 amperes, 7.5 volts to the 400 amp. 7.5 volt or 200 amp. 15 volt.

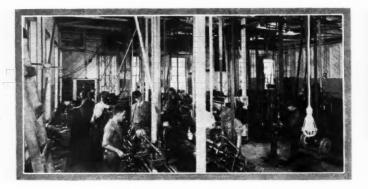


Weidenhoff Constant Potential Charger



National Twin Tube Vulcanizer

Age



Selling Maintenance to the Farmer (Continued from page 11)

There are no apprentices employed in the Coggins organization. Every man is an expert at his particular work, and he is compensated accordingly for his expertness. Coggins has no so-called "general mechanics." Every employe is a specialist in some one division of automotive maintenance.

"A good many farmers are inclined to undertake their own light repair work on tractors during the quiet seasons when they have ample time on their hands," says Coggins. "But, as a result of an inducement we have offered to our customers, they bring their equipment in to our establishment to do their work in our yard. For a charge of only \$1 a day, we allow them space and the use of a crane and a restricted list of tools. If the farmer is intent on doing a job himself, it certainly is to the advantage of



Front view of the C. E. Coggins establishment in El Centro, Cal. It has a total floor space of 30,000 square feet Machine shop of the C. E. Coggins plant. Its modern equipment represents an investment of \$40,000

the automotive house to encourage them to do it in his establishment. The many advantages are obvious. In the first place, you are assured of getting all the parts sales, but of greater importance, you are afforded an excellent opportunity to inspect the equipment and to offer your expert advise for the performance of certain needed work that must be brought into the shop. There is hardly a piece of equipment that is brought into our yard on which the owner intends to do the job that he does not send in a good amount of work to our shop."

During the busy seasons when crops are being harvested, Coggins frequently handles jobs in his shop at night. He will also take care of emergency work in the field. The farmers know they can depend upon Coggins' organization to give them prompt and efficient service, whenever and wherever they need it, that will keep their equipment moving.

Plan—Merchandise—Make Each Department Pay

(Continued from page 13)

merchant's vision of his entire business picture.

There is a steady increase in the number of dealers who make a profit on the used car business. Where you find such a merchant, though, you find he has an accounting system dealing separately with used cars and a policy that refuses to compromise in the matter of profitable used car sales. Good buying, rather than loose allowance practice is, of course, one of the foremost secrets. Obstinate refusal to be stampeded into wild trading by wild trading competition is one of the foremost allies of success.

And just a word about listing prospects.

One of the greatest aids to prospect finding is the not too-much-used market survey. A check-up on this situation discloses a surprisingly large proportion of successful dealers who, in looking back on their earlier days, now realize that neglect of survey was one of their serious initial blunders. Without going into details here on survey it will be stressed simply as a most necessary matter for the new dealer's consideration. No sales director can operate without good leads and the methodical market analysis is effective in multiplying the leads and maintaining the prospect file on the basis of highest quality.

Now, for the purpose of clarification and emphasis, let us list some of the high spots that belong in the new dealer's program:

Fix an ultimate goal for the business.

Plan.

Fit into the general plan a plan for the year and fractional periods.

Provide for a departmentized organization so as to set up an all-around automotive merchandising institution.

Merchandise each department systematically, persistently and individually.

Specify result quotas for each department and make each department stand on its own legs.

Adopt an accounting system dealing separately with each department and which will show at any time where each department or the entire business stands.

Deal with used cars as a separate department, buying this stock closely and insisting on a profit from this as well as from all other departments.

Make a survey of the market.

All of which is recommended to the beginner who aspires to the best opportunity available in the field of automotive merchandising. The principles set forth apply to the man who begins in a small way as well as the one who is able to start out on a large basis. In any instance he should have a definite purpose, a definite ambition and if he is to succeed he must travel by carefully drawn charts. Combine the elements of plan with vigorous merchandising and good business management and the opportunity in this avenue of activity is unlimited.

Appearance As a Used Car Salesman

Considerable attention to the "power of appearance" is important in selling used cars, in the belief of Harry A. Lang, sales manager for the A. L. Maxwell Company, Ford and Lincoln dealer, Evansville, Ind. The view of Mr. Lang is that conditions under which used cars are sold to make them inviting should approach as nearly as possible and practicable the conditions obtaining in the case of new car display.

Before being placed on sale, each car is painted in attractive colors. Pretty combinations of sea green, soft toned beige, royal blue, lavender and other shades develop interests that might not be aroused for the somber hued car. With all used cars thoroughly reconditioned and carrying a substantial guarantee, Mr. Lang declares the idea has been highly successful in moving many cars.

EDITORIAL,

Move the Used Cars, Too

MPROVED new car sales coming with improved weather conditions have logically resulted in material reductions in new car stocks in many sections of the country and at the same time in increased used car stocks. Dealers taking advantage of the opportunity to sell more new cars cannot get around the necessity of accepting trade-ins and unless the program includes prompt movement of the old cars this class of stock is bound to pile up and tie up capital that should be kept as liquid as possible in order to cash in fully on the accelerated market.

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The mistake many dealers make when they enter into a season of increased activity in new cars is in failure to anticipate the resultant increase in resale operations and prepare for putting pressure behind the used cars and thus avoid complications and congestion in that department

Then they get so busy selling new cars and storing old ones that before they realize how big a hole they have dug for themselves they have crawled into it and find egress blocked by second-hand vehicles.

This situation would not come to pass ordinarily if the dealer would only plan his operations so as to provide a free movement of used cars while—not "after"—the freer new car movement is under way.

Get into this new car selling with both feet but at the same time keep those used cars under way.

Good servicing is another way to keep from unselling an owner on the car he bought from you.

Something You Can't Laugh Off

ET earnings by General Motors units and four other large car manufacturing companies for the first quarter of the year show a gain of 103 per cent over the same period of 1925. Net earnings of five of the larger accessory manufacturing companies for the first quarter of the year show an increase of 15 per cent over the same period of 1925.

These figures cover pretty good cross-sections of both manufacturing fields and indicate good health and progress. They also reflect brisk business on the part of many dealers. With such a fine sign as this there is good ground for continued optimism and enthusiastic merchandising effort.

That Rubber Restriction Threat

ANNOUNCEMENT has been made by the British Colonial Office that if spot rubber should go down to an average of 21 cents a pound in May, June and July the plantations will be restricted to 80 per cent of the present output.

We do not know what the level of rubber prices will be over the period specified but it is apparent that the British government will permit the market to take a natural course only under certain conditions. The

Stevenson restriction move proved highly profitable to the British rubber industry, being actuated no doubt by pressure on the part of these interests, and having succeeded so signally in that effort the big plantations would not be above repetition of this political performance if market conditions do not happen to be what they might desire.

So long as the British Colonial Office submits to such subserviency we may look for official manipulations at any time when conditions can not be approved by the industry which sits in substantial judgment on the case.

It might be timely, however, for Washington authorities to enter a vigorous protest against the announced program of the colonial office before such a possible move is taken. An airing of this matter in parliament is one thing we should like to see and it might be effective in breaking the grip that the rubber interests have on the colonial office. We are not ready to believe that the British people would want a government agency used by any special interests, nor that with their traditional love of fair play, they would fail to note and object to such tactics on the part of Britain's officialdom.

Work for a Steady Patronage

SELLING the car is only the beginning of opportunity for the all-round automotive merchant. One other thing to keep in mind when the car is being sold is the chance to sell accessories. Another thing to think about is the buyer's future business. That will extend over quite a period if the case is handled properly, not only in the sale of maintenance but in later accessory sales and in another new car sale when the old one reaches the trade-in stage.

Dealers who center effort on retaining a permanent hold on the patron are those who are making the best headway. Sell the new car, sell it with as many accessories as practicable without overloading, then follow a policy that will always bring the buyer to your store for his automotive needs. That is what the dealer wants—a steady, dependable patronage.

The dealer's list of car owners is valuable not only in developing leads for car sales but in mail campaigns for accessory and servicing business. Extend that owner's list as much as possible.

Just a Little Sales Resistance

NE thing that will help the sale of used cars even when they have not been repainted is keeping them clean and free of dust. Mud on wheels, body and fenders make for a certain sales resistance in the beginning while dust-covered hoods and bodies are influences in the same direction. It requires little labor to keep the cars clean and shining and it is an effort that pays. Some members of the trade overlook the importance of all this and it is not too small a matter for consideration. Slick them up.

INVENTORIES ARE BEING REDUCED

Production at Steady, Slightly Lower Levels

Manufacturing Conditions on Whole Extremely Favorable at This Time

NEW YORK, May 19.—Although a few of the motor car factories have increased production slightly in the last two weeks, the majority are either maintaining schedules at levels previously established or are gradually curtailing. Current shipments by equipment makers are lower than they were a month or six weeks ago, clearly indicating retrenchment by the car manufacturers.

At the same time, it cannot be ignored that rather heavy stocks of parts and semi-finished vehicles were accumulated during the early months of the year, and part of the shipments of the last month have involved a considerable reduction in inventories.

From now on output will be closely dependent upon the state of the retail market and stocks in dealers' hands. So far the spring selling season has been up to expectations in total volume, but not all manufacturers are sharing equally in the good market. The leaders in public popularity are selling at record levels.

Manufacturing conditions are on the whole extremely favorable. Raw material costs continue to decline, while prices thus far have been fairly stable. Rumors of price-cuts are persistent, but this is more or less a permanent condition in the automobile industry. As long as sales remain at high levels the possibilities of lower prices are not very strong.

In line with the seasonal trend, parts and accessories are being sold in larger quantities, even tires showing some evidence of spring stimulation. Trucks and buses are still experiencing a record demand, while the export market is better than ever. South America is particularly looked to as a field for heavy expansion of American export business, the Argentine having recently come into first place as a foreign market for American automotive products. Roadbuilding, the chief need of the Latin-American countries, is proceeding at a rapid pace.

Ikert Leaves MOTOR AGE

CHICAGO, May 18.—B. M. Ikert has resigned as technical editor of Motor Age and will shortly take up his duties as business manager of another automotive publication. Mr. Ikert had been connected with MOTOR AGE for more than 10 years, having served for a time as editor, and has been particularly active in the promotion of better service and maintenance methods in the automotive industry.

Oneida Has New Line

GREEN BAY, Wis., May 15.—Under the direction of M. W. Kiley, the Oneida Manufacturing Co. has announced a new line of Oneida trucks and is now engaged in an aggressive selling campaign to again put the Oneida truck prominently on the market. The Oneida trucks are made in four sizes rating 1¾, 2¼, 3½ and 5 tons. A few changes have been made in the chassis but all models now carry steel all weather drivers cabs and complete electrical equipment as standard.

A. A. A. Standings

WASHINGTON, May 15.—The following standings of race drivers are announced by the contest board of the American Automobile Association:

Dri	ver Po	ints
1.	Hartz	1,320
2.	DePaolo	1,180
3.	Hill	552
4.	DeVore	535
5.	MeDonogh	340
6.	Elliott	190
7.	Comer	165
8.	Hearne	115
9.	Kries	115
10.	Batten	95
11.	Hepburn	90
12.	Evans	50
13.	Meyer	35
14.	Shattue	25
15.	Jones	25
16.	Woodbury	10
17.	Duray	. 5

John R. Lee Made Sales Manager of Dodge Bros.

DETROIT, May 15.—John R. Lee has been appointed general sales manager of Dodge Brothers, Inc., by E. G. Wilmer, president. He succeeds Robert Graham, who retired several weeks ago as vice president in charge of sales, when Graham Brothers sold their interests in the corporation to Dillon, Read.

For several years Mr. Lee held the position of assistant to the president of Dodge Brothers, Inc., and, since last December, has been assistant general sales manager.

Three new assistant general sales managers were appointed to serve with Mr. Lee. They are: H. J. New, formerly director of distribution; W. M. Purves, former division sales manager; F. R. Valpay, former director of the commercial car and truck division. New's duties will embrace agreements and distribution. Purves will be in charge of districts and field operations and Valpay will concentrate on Dodge Brothers commercial car and Graham Brothers truck sales.

White Has New Branch

COLUMBUS, O., May 15.—A direct factory branch of the White Co. to sell and service White motor trucks has been established at 307 South Sixth St., Columbus.

Rail Birds and Drivers Flocking to Speedway

Schmidt Specials Arrive and DePalma and DePaolo Are On the Ground

INDIANAPOLIS MOTOR SPEEDWAY, May 15.—The ancient and honorable klan of rail birds is flocking back from hibernation in winter quarters. Several of the watch-charm editions of the gasoline motors are at the track (most of them "down") with the bulk of them on the way.

The Schmidt Specials from France arrived in Indianapolis this week, but they were in bond for the noted Schmidt who to date has not yet arrived. As soon as he reaches the Hoosier metropolis the customs formalities will be expedited and the rail birds will line the track. "Pop" Meyers reports that the special passes for the paddock are in great demand in the last two days, and a full chorus of the watchers is expected out by Monday.

Hale Barber, who used to be a noted manager of speed cars in the days of "stock car" races and who was the man behind the guns in the first entries of the Fronty-Ford Barber-Warnock specials, says he is sure he can lift one of the new motors up to his neck without half trying.

"Uncle Ralph DePalma and wee Pete DePaolo are here, and other noted speed merchants will be here to join Fengler, Hartz, Bennie Hill and the rest of the hurry artists. De Palma believes that there will be enough of the four-star Old Timers with himself, Mulford, Eddie Hearn, Earl Cooper and one or two others to team against the young bloods of the boards and bricks and make them step a little faster then they have been doing.

With Guyot and possibly Goux and W. Douglass Hawkes, former Speedway stars, back at the game this year the International Old Timer's Club should give a very good account of itself if the mounts are up to the masters.

Visit Detroit Plants

DETROIT, May 15.—A delegation of 150 representative business men of Tulsa, Okla., came to Detroit yesterday on a special tour being conducted by the Tulsa Chamber of Commerce, to inspect local automobile factories. The party, which is traveling in 10 special Pullmans, was greeted at the depot by officials of the Ford Motor Co., who took the members on a tour of inspection of the Fordson and Lincoln factories. After seeing the Ford industries, the visitors went to Dodge Brothers, Inc., where they were entertained at luncheon, followed by a tour through the Dodge factory.

S.A.E. Completes Details of French Lick Meeting

Many Changes in Standards and Practices Will Be Proposed June 1

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NEW YORK, May 15.—There are 37 reports with recommendations for changes in and additions to the Society of Automotive Engineers standards and recommended practices to be made to the standards committee of the society by 15 divisions of the committee June 1, the first of the four days' summer meeting of the S. A. E., which is to be held at French Lick Springs Hotel, French Lick Springs, Ind. The semi-annual business meeting also will be held on the opening day.

On June 2 the morning session will study "Riding Qualities," with an address by W. C. Keys, Gabriel Snubber Sales and Service Co., on "How Do Cushions and Cushion Springs Affect Riding Qualities?", and one by R. W. Brown, Firestone Tire & Rubber Co., on "Instrumentation and Results of Riding-Quality-Tests." In the afternoon there will be an airplane demonstration and air plane photographic exhibition. The subject of the evening session will be "Headlighting Demonstrations." K. D. Chambers, Light and Knowledge Press, will present a "Complimentary-Color Headlighting Demonstration," and the research subcommittee on headlighting will demonstrate "Testing Equipment and Methods."

At the race session on the morning of the third, there will be informal talks by Fred Duesenberg and others prominent in racing on engineering features incorporated in the cars that participated in the Indianapolis races. The fuels and lubrication session in the afternoon will include these papers: "Causes of Wear and Tear in Engines," by O. M. Burkhardt, research manager of the S. A. E.; "Gasoline Testing," by T. S. Sligh, Jr., Bureau of Standards; and "The Influence of Temperature, Fuel and Lubricant in Forming Motor Carbon Deposits," by W. A. Gruse, C. J. Livingstone and S. P. Marley, Mellon Institute of Industrial Research. In the evening K. H. Cummings, Bureau of Standards, will discuss "Possible Solution of the Anti-Freeze Problem." The grand ball will be held The grand ball will be held that night.

At the session on the morning of the fourth, A. L. Stewart and Ernest Wildhaber of the Gleason Works will discuss "Design, Production and Application of the Hypoid Rear-Axle Gear," and L. D. Buckendale of the Timken Detroit Axle Co. will deliver a paper on the "Engineering Story of the Worm-Gear Drive." In the afternoon at the tire session, "General Results of the Co-operative Motor Truck Impact Tests," by J. A. Buchanan, Bureau of Public Roads, and J. W. Reid, Rubber Association of America, will be presented. Also "Drop-Center Rim and Tire Developments," by B. J. Lemon of

Morgan & Wright plant, United States Rubber Co.

The Society reports that more than 500 members and guests have already forwarded reservations and a recordbreaking attendance is expected. Many are planning to attend the Indiana Section dinner the evening of May 30 and the Indianapolis races on the 31st.

Through the courtesy of Major J. F. Curry, Commanding Officer of McCook Field, the Engineering Division of the Air Service, U. S. Army, will provide an airplane photographic exhibition, during which members will be photographed from the air, and a print will be delivered by parachute a few minutes after the exposure is made.

Peerless Picks Misch As Service Engineer



Albert F. Misch

CLEVELAND, May 15.—Edward Ver Linden, president of the Peerless Motor Car Corporation, has announced the appointment of Albert F. Misch as service engineer. Mr. Misch has served Peerless for 25 years. He has always been connected with the manufacture of Peerless cars and has a first hand knowledge of mechanical details of every model of car ever built by Peerless. In his position it will be his duty to put this knowledge at the disposal of the service departments of the rapidly growing Peerless dealer organization.

Opens New Salesroom

SEATTLE, Wash., May 15.—The formal opening of the new building of the Willys Overland Pacific Company of this city, saw one of the largest crowds ever to attend an opening of an automobile establishment in Seattle. The new building is a two-story structure which gives 113,420 square feet of floor space, and is said to be the finest and largest structure of its kind in the Pacific Northwest.

M.& A.M.A. Board Plans First Hand Trade Study

Association Heads Will Meet Heads of Member Firms in Four Big Cities

NEW YORK, May 15.—Directors of the Motor Accessory Manufacturers' Association have decided to make a first-hand study of business conditions and problems affecting the membership. The board will make a tour of the membership centers, holding meetings in Cleveland, Detroit, Chicago and New York.

Meetings will be held in Cleveland, Tuesday, May 18, Detroit, Wednesday, May 19, Chicago, Thursday, May 20 and New York, Thursday, May 27. In each city the principal executives of member companies will be guests of the association at dinner, after which informal discussions will be held of current and prospective business conditions, vital problems of the parts-accessory-service equipment industry and means of utilizing to the fullest degree the association's facilities for meeting these problems.

H. L. Horning, president of the Waukesha Motor Company and president of the M. & A. M. A., virtually all members of the board of directors, General Manager M. L. Heminway and the department heads of the association will attend all meetings. Members of the board will invite discussions of members' problems and the association's activities in meeting them, hoping in this way to bring about better understanding and closer cooperation than ever before between the association and the members and among the members themselves.

The meetings will be held at the Cleveland Hotel in Cleveland, the Statler in Detroit, the Blackstone in Chicago and the Astor in New York. Local committees in charge of arrangements will be headed by W. M. Albaugh of Thompson Products, Inc., in Cleveland, M. A. Moynihan of the Gemmer Manufacturing Company in Detroit, M. B. Ericson of the Biflex Products Company in Chicago, and J. M. McComb of Crucible Steel Company of America in New York.

Leads Franklin Sales

SEATTLE, Wash., May 15.-A. W. Scott of this city, Franklin retail salesman, is high man for the first quarter in a selling contest in which the entire Franklin retail organization is organized along army lines. Each man started with the rank of "rookie" and promotions are determined by sales volume accomplished. The army was divided at the offset, into five divisions, the classifications being determined by the size of the cities. Special awards were made for those who obtained a high per cent of their business from people who had never before owned a Franklin car. It was in this particular that Scott was so successful.

Used Car Problem Slows Salt Lake April Volume

New Automobile Stocks Are Normal and in Some Cases Very Low

SALT LAKE CITY, May 15.—Retail automobile business is generally not as good as expected. It was felt that the great improvement in the industrial situation was going to accomplish more for the industry. On the whole dealer stocks are normal, though in not a few cases they are lighter than during the same period last year.

In used-cars, dealers, excepting a few who have paid special attention to the problem, are carrying heavier stocks than they carried a year ago, much

heavier in some cases.

The salesmanager of one firm, a pioneer in the field, says the automobile business this spring is one big used-car problem. He said there was lots of business in sight if only the used-car could be kept in the background. One or two firms, determined to move their new cars at all costs, have advertised their willingness to act generously with the purchaser of a new machine who has a used-car to turn in.

A feature of the used-car sales this spring, however, according to two or three companies, is the cash sales. One firm reported about half their used-car sales as cash transaction. In spite of this, though, the public is clamoring for longer, and longer terms on both used and new cars. Eighteen months is now given quite freely on new cars, but not many are willing to go beyond 12 on used-machines.

Roadster Output High

· PONTIAC, Mich., May 15.—So successful has been the sale of new Oakland six sport roadster, which was introduced early in January, that 15 per cent of the total Oakland production for the first four and one half months this year has been devoted to this one body style. There are six body types in the Oakland line and it is considered remarkable for a sport roadster to reach such a high proportion of total production. During 1925, the Oakland roadster and sport roadster sales combined averaged approximately 5 per cent of total sales. Thus the proportion of new sport roadster production and sales so far this year has been 200 per cent greater than both these previous cars averaged last year. From January through May 15th the production of sport roadsters totalled 3,633 and as the factory is still behind in orders these figures are synonymous with sales

Chrysler Reports Profits

NEW YORK, May 15.—Chrysler Corp. and subsidiaries for the first quarter of 1926, reports net profit of \$4,112,089 after charges but before Federal taxes, equivalent after dividend requirements on the

\$8 preferred stock to \$1.35 a share on 2,707,080 shares of no par common. This compares with \$3,501,227 reported by the Maxwell Motor Corp., the predecessor company, or \$1.13 a share on the present Chrysler share basis in the first quarter of 1925.

Gorrell to Study Air Trade

INDIANAPOLIS, May 15.—Announcement has been made of the appointment of E. S. Gorrell, vice-president of the Stutz Motor Car Company of America, as a member of a special committee of the Chamber of Commerce of the United States of America, whose headquarters are in Washington, D. C., for the purpose of making a study of the aeronautic situation with a view to furthering the development of civil and commercial aeronautics in this country.

Uses "Bargain Sales"

SYRACUSE, N. Y., May 15.—Hubert J. Wright, Oakland dealer in this section is convinced that outstanding bargains bring the crowds. He had a crowd of 500 waiting for his used car rooms to open when he advertised a 1922 Franklin touring, with good rubber, in good mechanical condition and good paint, and a 1926 state license for \$4.98. The first man who managed to get inside the door and reached the car drove it out after refusing the change for a \$5 bill. About 20 men parked themselves at the front door all night to get a chance at the bargain. Wright has made similar offers several times before and at each sale he cleans out his used car floor without much trouble, usually within 24 hours after the sales started.

Detroit April Deliveries Far Ahead of Last Year

DETROIT, May 15.—Retail deliveries of new cars in Detroit in April ran far ahead of deliveries in the same month last year, and in most lines showed important gains over March. Business has been well sustained throughout the month but has shown a tendency toward reduction in the latter part, lower priced lines being especially affected by this falling-off.

Business in May is expected to continue on much the April basis though lower priced lines may suffer sharply reduced sales. This is due to a gradual slackening of work in a number of plants, resulting in increasing unemployment and in increased numbers of workers on part time. Many workers now meeting payments on cars are affected and extension of time on payments is being asked in an increasing number of instances.

Movement of used cars has not been satisfactory and much of the dealer profit on new car sales is represented in used car stocks. Good weather is expected to bring used car buyers into the market. Prices on used cars are maintaining their usual levels despite slow movement and there is no evidence of unloading at sacrifices.

Latin-American Editors Visit Automobile Plants

Trip Through Various Phases of Industry Surprises Visitors with Magnitude

DETROIT, May 15.—The automobile industry is going to profit through the recent visit of the Latin-American journalists to this country. As guests of the National Automobile Chamber of Commerce and various automobile manufacturing concerns the Latin American newspapermen were taken on a tour through the great motor car manufacturing centers.

Many of the visitors have been in this country before, but never did realize the magnitude of the industry until they were taken through the various manufacturing plants, where they saw the marvellous ingenuity of American motor car manufacturers in producing efficient transportation at the lowest minimum of cost.

For 10 days the visitors were guests of the industry. Leaving New York City, they visited Buffalo where they were guests of the Pierce-Arrow Co., and other concerns. Then they journeyed to Akron, O., where they observed the manner in which millions of automobile tires are produced annually.

The trip next took them on to Toledo, where they were guests of Willys-Overland, and then they proceeded to Detroit where they spent four and a half days in the automotive capital.

Practically all the large factories in Detroit were visited by the delegation during their stay here.

Leaving Detroit, the party was taken to Pontiac, where they inspected the Fisher Body Co. plant, after which they left for Flint where they saw the General Motors Corp. housing development and the Chevrolet Motor Co. and Buick Motor Co. factories. From Flint the party went to South Bend, Ind., as guests of the Studebaker Corp.

Opens Third Store

ST. LOUIS, May 15.—Steinger-Tuthill. Inc., south St. Louis Hudson-Essex dealer, has opened its third place of business, a night and day service garage, a gasoline station and a used car show room, located at Grand boulevard and Gravois avenue. On opening day customers were given free oil and in addition flowers were distributed to women visitors.

Takes Velie Distribution

BUFFALO, N. Y., May 15.—A. W. Julius of Buffalo, city dealer for Velie, holding a franchise since 1916, has been appointed distributor for Velie for western New York and northern Pennsylvania. Mr. Julius has opened his new sales and service headquarters at 1293 Bailey Ave., Buffalo.

U.S. Chamber Hears Time Selling of Cars Indicted

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Banker Warns Industry That Check Must Be Made— Reeves Answers

WASHINGTON, May 15.—The automobile industry became the center of a controversy at the opening session of the 14th annual meeting of the Chamber of Commerce of the United States when O. H. Cheney, vice-president, American Exchange, Pacific National Bank, New York, issued a warning that present tendencies in instalment selling of automobiles were unsound and should be checked.

He said "A casual glance at the automobile financing field finds chaos. Liberalization of terms has been accompanied by perfunctory investigation and fewer rejections of applications. As a result, repossessions have increased, collection costs increased and losses increased. But these have not yet become painfully high because the country has been prosperous and there have been comparatively few defaults.

"As a result of ruthless competition the automobile industry today is no longer selling automobiles, it is selling instalment contracts. It is selling pieces of paper with a lot of legal verbiage which the buyer may or may not understand, and which he may or may not be able to follow out. The buyer is encouraged to shop around for the most expensive car he can get with the lowest down payment and the longest time in which to pay."

Replying to these assertions, Alfred Reeves, general manager of the National Automobile Chamber of Commerce, declared that the automobile industry should not be indicted if an occasional buyer defaulted. He said that time selling of automobiles was, on the whole, sound, and that it had helped many people to own cars who otherwise would have been unable to and that the added production enabled thereby had resulted in much lower costs and prices which, under automobile selling methods, the cash buyer was able to take advantage of. In other industries, said Mr. Reeves, the cash buyer usually had to pay part, at least, of the expense of financing. The American people are honest and pay their debts, he continued, and he said that opposition to instalment selling usually came from interests unable to profit by the system.

Efforts to pass resolutions on instalment selling at the domestic distribution group meeting were unsuccessful.

Aviation will not be fully commercialized in this generation, but eventually the aviation industry will be as large or larger than the automobile business Capt. E. V. Rickenbacker, vice-president of the Rickenbacker Motor Co. told the transportation group at its session Tuesday afternoon. At least two generations have been necessary to commercialize all

other great transportation inventions in the past, Captain Rickenbacker pointed out, the second generation being free from the set habits and inhibitions of the group which already has reached maturity at the time the possibilities of the invention were received. The insurance advisory committee of the Chamber recommended that the national body oppose the principle of compulsory automotive insurance.

The changing means and methods of distribution were accorded official recognition by business leaders of the country when the Domestic Distribution Group of the Chamber of Commerce of the United States passed resolutions calling for a national census of distribution along the lines of the census of manufactures. In reaching this decision the group considered many of the problems that are being faced by distributors of automotive products. Other matters of importance to the industry arising at the meeting were:

The chamber went on record as definitely opposing compulsory automobile liability insurance.

Business men were urged to make the fullest practicable use of commercial air transport and passage of Federal legislation now in Congress to regulate and promote commercial aviation was urged.

Authorities on agriculture said that although the situation of the farmer is not particularly good at present, improvement may be looked for, which would have a bearing on sales possibilities for automotive products in rural districts.

As furthering "self-government in business" the formation of trade-relations committees was advocated, so that manufacturers, wholesalers and retailers might work out their problems for the good of all.

Fred J. Haynes, chairman of the Board of Dodge Brothers, Inc., was re-elected a member of the board of directors.

Buick Delivers 31,631 Cars to Owners in April

FLINT, Mich., May 15.—The actual delivery of Buick automobiles to owners, during April, totaled 31,631 units, according to E. T. Strong, general sales manager. The previous monthly record for the current series was made in March, when 23,224 automobiles were delivered.

The shipments for April were 24.089, Mr. Strong said, and the excess of deliveries over shipments for the month was 7,542 cars. Buick has broken all previous delivery records in the nine months since August, 1925, when the 1926 models were introduced. A total of 175,-215 cars or an average per month of about 19,500 have been delivered.

The factory has been operating at peak capacity since last August. The usual mid-winter shutdown for inventory was postponed because of the demand for cars and a \$2,000,000 expansion program to increase capacity to 30,000 cars a month is now under way. Work is progressing on several new buildings and more equipment is being added.

General Motors Sales in April Break All Records

Retail Volume Totals 136,643 Vehicles, Compared to 106,051 in March

NEW YORK, May 15.—April sales of General Motors Corp., to users by dealers broke all records for any month in history, according to a statement just issued by Alfred P. Sloan, Jr., president.

"April retail sales by our dealers," said Mr. Sloan, "were 136,643 cars and trucks compared with 106,051 cars and trucks sold in March, which was the previous high point. Prior to that April, 1923, with 105,778 cars, had been the high record.

"This record breaking April compares with 97,242 cars sold at retail by dealers in April last year and 89,503 cars in April 1924.

"These figures exceed even our most optimistic forecast and substantiate what our dealers told us would happen when the spring weather finally arrived.

"The total retail sales for the first four months of this year is 361,363 against 233,008 for the first four months of 1925, an increase of 55 per cent. Sales of cars by the manufacturing divisions of General Motors to dealers in April were 122,742, compared with 113,341 in March and further with 85,583 in April last year, and 58,600 in April 1924. For the first four months, sales by the divisions to dealers were 403,728 cars and trucks, compared with 240,898 in the same four months of 1925, and 275,150 in 1924."

Dealers' Sales to Users

13	926	192	:5	1924
Jan 53	,698	25,5	593	33,574
Feb 64	,971	39,5	579	50,007
March106	.051	70,5	594	57,205
April136	,643	97,2	242	89,583
361	,363	233,0	008	230,369
Divisions	Sales	to D	ealers	
1	926	192	25	1924
Jan 76	,332	30,6	342	61,398
Feb 98	3,313	49,1	146	79,668
March113	3,341	75,5	527	75,484
April122	,742	85,	583	58,600
403	3.728	240.8	808	275,150

"These figures," said Mr. Sloan, "include passenger car and truck sales in the United States, Canada and overseas by the Chevrolet, Pontiac, Oldsmobile, Oakland, Buick and Cadillac manufacturing divisions of General Motors."

Essex Boosts Output

DETROIT, May 15.—An increased production of 50 per cent in the daily output of the Essex six coach is announced by O. H. McCornack, vice-president of the Hudson Motor Car Co. The May output of Essex coaches under the new increased schedule will be 16,675, or 2080 more than the entire Essex production in May of a year ago, which at that time broke all records for volume. "This increase of business is on the coach model, of which more than 300,000 are in service," said Mr. McCornack.

Jordan Sees No Basic Trouble with Industry

Manufacturer Believes Individual Judgment Wrong in Some Cases

NEW YORK, May 15.—Edward S. Jordan, president of the Jordan Motor Car Co., has issued a statement in which he says that "there is nothing the matter with the automobile industry, but there is something the matter with the judgment of some of the people who are in it."

Mr. Jordan declares that the following three things have happened recently:

"The manufacturers, in their ambition to get volume, were producing beyond the capacity of the dealers to finance and handle credit sales.

"The stock market in the hands of professionals had been bulled to a point where it could not possibly be sustained and, as usual, the reaction in motor stocks was far greater than any of them deserved. All good motor stocks are cheap today.

"You cannot go on building the same automobile for ten or twelve years, when other automobiles are being improved, and still maintain the same volume of sales."

Explaining his meaning, Mr. Jordan continued:

"During the last year a number of manufacturers were ambitious to double their production. They introduced ideas in credit selling which were extreme. The credit sales of the country have a limit, depending upon the general prosperity of the workers. After a sufficient number of men have mortgaged their futures, buying automobiles, there is a reaction. That reaction started about the first of February and it will take 30 to 60 days for it to level out. Then you will find that sales will go on as The demand for new cars is before. always insatiable. Limitations in credit are quite definitely fixed.

"The stock market episode simply represents the triumph of experience over hope. The publicity which followed the slump in the stock market created fear in the minds of dealers throughout America, but did not change the fundamental business conditions which are perfectly sound. A lot of people throughout the country who knew very little about fundamental things were pretty prosperous and they wanted to get rich quicker. They were trying to guess what the smart fellows were doing in the market. As usual they guessed wrong. So that's that.

"You simply cannot build the same car for 10 years and think that your sales will constantly increase. Dealers understand this better than anyone else. You can keep on reducing your price and touch lower levels of income or purchasing power, but there is a limit even to that. The result will be a period of

several months in which volume producers will strive to improve their cars."

French Race List Closed

PARIS, May 4.—(By Mail)—Twelve cars only will start in the French Grand Prix automobile race on Miramas track, near Marseilles, June 27, for the lists have now closed and no more entries will be received. The makes represented are Delage, Talbot, Sima-Violet and Bugatti. According to a recent decision of the Automobile Club of France, two short loops will be inserted in the 5kilometre track, thus obliging the cars to drop to minimum speed twice per lap. There will be no elimination race, and the distance will be nearly 500 miles. The club makes the statement that the loops have been adopted in order to reduce speed and help eliminate accidents. Coming two months before the race, the change is not well received by competitors, who point out that while the average speed will be reduced the maximum will not be affected. As tires will be severely stressed by reason of the drop from maximum to minimum every mile and a half, followed by rapid acceleration, the probabilities are that the danger element will be increased and not decreased. Further, the cars have been built for a race on a fairly fast track and the insertion of two loops will upset all technical arrangements.

Gotfredson Adds Sixes

DETROIT, May 15.—Gotfredson Corp. of Canada, Ltd., has added a line of six-cylinder trucks to its present four-cylinder line, all units of the two lines, including the wheels, being interchangeable. Special attention has been given to weight distribution in the design of the new line so as to come within the weight limitations on state highways.

Chevrolet Demand Ahead Of Supply in Northwest

SEATTLE, Wash., May 15.—Coming directly from headquarters, F. N. Coats, regional sales manager of the Chevrolet Motor Company, is making a general business survey of business conditions of the Pacific Northwest.

Unprecedented spring buying, it was said, both here and in other parts of this district, upset the production program of the Chevrolet Motor Company to such an extent that Mr. Coats will spend several days in Washington surveying the conditions in an attempt to gauge dealer requirements during the coming quarter. Several solid car loads of cars shipped into this territory have failed to meet the demand.

"Sales showing in the Pacfic Northwest has been most spectacular," said Mr. Coats. "Buying in other parts of the country too, has been unexpectedly heavy. In the last seven months the Chevrolet Motor Company has added 1,619 direct and associate dealers to its selling force, making a total of 7,500 representative firms throughout the country.

Automotive Tops All U. S. Industries in Labor Pay

Average Wage Scale Per Hour Is 47 Cents—Petroleum Business Second

WASHINGTON, May 15.—The automotive industry leads all other industries in wages paid its common laborers, according to a report just made public here by the bureau of labor statistics, Department of Labor. The average wage scale per hour in the automotive industry for this class of help is 47 cents.

The petroleum industry, the report shows, is only slightly lower than the automotive industry with an average per hour of 46.8 cents. The lowest average rate, 32.4 cents, appears in the sawmill industry.

The automotive industry and lumber industry are tied, according to the statistics in the maximum per hour wages for common laborers with 62.5 each. The minimum per hour wages in the automotive industry of 33.3 is exceeded only by the slaughtering and meat packing industry which holds a minimum of 37.5 per hour.

Industries covered in the survey include: Brick, tile, and terra cotta, cement, electrical machinery, apparatus and supplies, foundry and machine-shop products, iron and steel, leather, lumber, paper and pulp, petroleum refining, slaughtering and meat packing and public utilities.

Moon Promotes Neuwoehner

ST. LOUIS, May 15.—In announcing the appointment of Hiram Neuwoehner as assistant sales manager of the Moon Motor Car Company the company thus emphasizes its policy of bringing closer and closer together its sales and service divisions. Until his new appointment Neuwoehner was manager of service for the company, having served in this capacity two years during which time he gained an intimate knowledge of service and of the vital importance of rendering uniform service to owners. This knowledge of service places Neuwoehner in an advtantageous position and it links together two of the most important branches of the automobile business, sales and service.

Plan Safety Courses

DETROIT, May 15.—A special course in traffic and safety engineering will soon be offered at the University of Michigan. Ernest Greenwood, executive secretary of the National Conference on Street and Highway Safety, told members of the Detroit Engineering Society at the monthly meeting. Mr. Greenwood told the engineers that he had just succeeded in raising a fund which will amount to \$75,000 to \$100,000, annually, to finance the course. He declared that details would be released later, after the entire plan has been worked out.

General Motors Sells Its 5,000,000th Car

In Twelve Months Ending May 8, Divisions Produce 1,002,285 Vehicles

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NEW YORK, May 15.—On May 8, General Motors sold its five millionth car. It required more than nine years to sell the first million but only 12 years to sell the five million.

In the 12 months ended May 8, General Motors Corp. divisions produced and sold 1,002,285 cars and trucks, exceeding all previous records by a wide margin. When the value is considered, the company believes that this constitutes a new record sales volume for the automobile industry.

Sales of General Motors car divisions, by calendar years below, shows that this year's sales, up to May 8, were more than one-half the total sales of 1925:

Year	No. Cars	Year	No. Cars
1910	39,300	1919	391.738
1911	35,752	1920	393,075
1912	49,696	1921	214,799
1913	57,270	1922	456,763
1914	61,584	1923	798.555
1915	102,388	1924	587,341
1916	146,185	1925	835,902
1917	203,119	1926*	421,300
1918	205,326		
		Total	5,000,093

*1926 figures to May 8.

Chevrolet to Expand

DETROIT, May 15.—Chevrolet Motor Co. will increase its manufacturing facilities to provide for a production of 4000 cars daily, an increase of 1000 over the present daily capacity. The new facilities will be available by Jan. 1, 1927. Additions will be built to the main factory buildings in Flint where the motor plant and metal stamping divisions are located. Factories are now running two 50 hour shifts weekly to meet the demand for cars.

Plan Second Air Tour

DETROIT, May 15.—Tentative arrangements for the 1926 Commercial Airplane Reliability Tour for the Edsel Ford Trophy have been completed. Accord-

ing to the latest announcement by William B. Mara, chairman of the general committee for the tour, the second annual reliability test will start August 14 and end August 28. This year's tour will cover a period of two weeks instead of one week, the object for extending the time being to give the plane manufacturers more time to display their products at the various stopping places on the route. The tentative calling points this year will be Detroit, Chicago, Milwaukee, Twin Cities, DesMoines, Omaha, St. Joseph, Wichita, Kansas City, St. Louis, Indianapolis, Cincinnati, Fort Wayne, Detroit. The total distance this year is approximately 2,270 miles.

Andrews Is Made Sales Manager of Duesenberg

INDIANAPOLIS, May 15.—Important developments in the production and merchandising of Duesenberg cars were forecast by Fred S. Duesenberg, president of the Duesenberg Motors Company coincident with his announcement of the appointment of Douglass Andrews, formerly of the Stutz sales organization and other prominent makers, as sales manager for the Duesenberg. Mr. Andrews assumed his duties this week and is developing a plan of distribution which is expected to give the car a much wider sale in many parts of the country. In making the announcement Mr. Duesenberg said:

"For years we have been developing the engineering and production principles back of the Duesenberg motor cars. We are now ready to start a program of distribution which we hope will insure an adequate representation in every leading center in the country and in foreign fields as well."

It is understood here that Duesenberg has been planning important developments for some time, and that the concern is now in a position to undertake important expansion plans for which preparations have been in the making for several months. Production so far this year has been good at the plant with a good bank of back orders keeping the plant at a good rate for several months past.

Willys Reports Net of \$1,233,826 in Quarter

Knight Production Now at 550 Daily, Double Former Highest Figure

TOLEDO, O., May 15.—For the quarter ended March 31, Willys-Overland, Inc., and subsidiaries report net profit of \$1,-233,826 after charges but before Federal taxes, equivalent after allowing for 7 per cent preferred dividend requirements, to 36 cents a share on 2,527,050 shares of par \$5 common outstanding. This compares with \$3,171,466 or \$1.23 a share on 2,264,643 shares outstanding in the first quarter last year.

At the annual meeting, John N. Willys, president, said that earnings for the first four months this year, after all charges, excluding Federal taxes, exceeded \$3,250,000, or the equivalent of the entire year's dividends on the 7 per cent preferred, with a balance for the common. To this total April contributed more than \$2,000,000 and, based on current sales, prospects and unfilled orders, May is expected to net at least \$2,500,000.

Mr. Willys expects that the second quarter will break the record net earnings of \$7,284,115 in the second quarter last year.

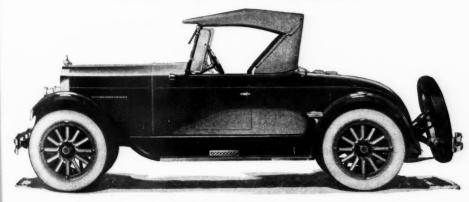
He added that Willys-Knight production had reached the record breaking figure of 550 daily, about double the highest Willys-Knight production last year. Second quarter Willys-Knight sales would exceed 30,000 or 50 per cent of the total last year, which was a record. Six-cylinder production had increased every month this year and May sales will be the largest in the company's history. Total production capacity for all models was 50 per cent higher than last year.

Mr. Willys said that the decrease in earnings in January and February was caused by the gap in production incident to discontinuance of two models and the time necessary to bring into production the new Willys-Knight 6-70 model.

Husky Wrench Moves

MILWAUKEE, May 15.-In order to take care of increased business and provide manufacturing space for the completed line of socket wrench sets and interchangeable soft tip hammers, the Husky Wrench Co., has moved its executive offices and factory to Twentyseventh & Florence Sts., this city. The export office remains at 280 Broadway, New York City. The new catalog of the complete line of socket wrench sets and soft tip hammers is now ready for distribution. Officers of the company are John G. Zummach, president and treasurer; Sigmund Mandl, vice-president and Joseph Wirtish, secretary.

New Star Six Roadster



New Star six roadster described in these columns last week

May 20, 1926

Pat Davis of Houston To Lead Texas Dealers

Dallas Is Selected as Next Meeting Place of State Association

GALVESTON, Tex., May 15.—Electing Pat Davis of Houston president and selecting Dallas as the next meeting place the Tenth Annual Convention of the Texas Automotive Dealers Association a stirring three day session in which many important manufacturers as well as dealers and jobbers spoke came to a close here today.

Resolutions of trade interest resulting from the convention included one that dealers buy used cars only within the limits prescribed by reliable price standards. Another resolution urged more liberal speed laws and more stringent regulation of drivers. A time payment resolution recommended that all adhere strictly to the standard terms of one-third down and twelve months to pay on new cars and 40 per cent and twelve months on old cars. Flat rate repairs were also advocated during the meeting.

Discussion of legislative action to protect dealers and provide a connected system of state highways occupied the closing session. Action on the following matters was left to the incoming legislative committee; lowering of license taxes to bar registration cost; installation of a gasoline tax; union labor in the mechanical department and recent court rulings on chattel mortgages in connection with used car sales.

Other officers elected were: W. A. Williamson, San Antonio, vice-president and manager; T. M. Scott, Virginia, and George K. Marshall, Galveston, vice-presidents; J. W. Atwood, Dallas; Walter Gerlich, New Braunfels; F. A. Ferris, Dallas; Hal Collins, Denison; D. T. Reed, Corpus Christi; F. W. Welch, Mexia; J. J. Cornwall, Waxahachie; Tom Goad, San Antonio and B. K. Appleman, Beaumont, directors.

E. B. Gallaher, president, Clover Manufacturing Co., Norwalk, Conn., declared on the opening day the automobile business was in a chaotic state and urged contraction of expanding credit and the jobber-dealer method of distribution as a means of returning to "business sanity." C. O. McCauley, Waco, president of the state jobbers, also spoke on the opening day.

D. S. Eddins, Olds Motor Works, Lansing, Mich., predicted better relations between dealer and manufacturer in a talk on the second day. A feature was the talk of C. W. Manford, Cadillac dealer, Houston, who told how his firm had managed successfully to "forget the used car" altogether. E. J. Poag, Buick research man of Flint, Mich., forecast a far distant saturation point in Texas, especially. A. L. Deane, vice-president of the General Motors Acceptance Corporation, New York, urged "talking credit" instead of terms, and F. E. Mos-

kovics, president of the Stutz Motor Car Company of America, Inc., told how education and good roads have increased with the progress of motoring as third day features.

Ellis H. Boyd, Fort Worth, retiring president, was highly praised as was Mr. Williamson, who was re-elected vice-president and manager.

Stars Adds Convertible Four

NEW YORK, May 15 .- Durant Motors, Inc., announces a new convertible roadster in the four line priced at \$540. By unscrewing four nuts the commercial box on the four roadster can be removed and the rear deck cover substituted, thus converting the commercial car into a passenger roadster and vice versa. In order to leave the rear of the car unobstructed for loading or discharging luggage, merchandise, etc., the tire carrier is mounted on the left running board. Finish is blue lacquer, tires 30x31/2 clincher cords, upholstery and top black artificial leather. Side curtains 'open with the doors and the windshield is two-piece double-ventilating.

Sets Seattle Record

SEATTLE, Wash., May 15.—Selling 32 cars in one month, George Britten, salesman for the Sands Motors Company, Studebaker distributor, sets a new sales record for this city. It is said that this record has been exceeded only once by any Studebaker salesman in the country. Last July a Studebaker salesman in New York City is reported to have made a bigger record.

U. S. Decides to Repair Trucks in Own Garages

WASHINGTON, May 15.—A change in the War Department's plan to have all of its automotive equipment repaired in private garages and shops was announced here this week by the Department. Announcement was made on January 1 by governmental officials that as part of the government's economical program all of the War Department's motor transport repair shops would be closed, and that in the future all major automotive repairing would be done by private contract.

The change in the policy, as formerly announced the department says, has been due to the fact that a careful cost analysis has resulted in the conclusion that the government will save money by continuing operation of its own motor transport repair shops. Unit repair and replacement system will be the basis of operation for the next year, and instructions as to the new policy will be announced later by the quartermaster general, it was said.

The decision of the War Department, as to whether it will, or will not, eventually abandon its repair shops, is not conclusive, and the future policy of the government in this respect will be announced in about a year, the department states, "after a still further study of the problem."

April Sales in Buffalo Show Gain Over 1925

Used Car Conditions Reported About Normal Despite Bad Weather

BUFFALO, N. Y., May 15.—April in the sale of new cars proved to be slightly better than the same month last year and relatively better than March this year, despite the fact that there was much inclement and cold weather during the month.

Used car sales in many instances are reported no worse than those of a year ago and in many instances used car conditions are reported to be better. Dealers who have been careful in making allowances and have managed to gain the confidence of the public by guarantees of condition of used cars are in fairly good shape, particularly when they have supplemented these factors with aggressive merchandising and advertising methods.

Tire sales for April are slightly higher than the same month last year and conditions are considered very favorable for business in May.

Manufacturers of motor vehicles here and also of automotive equipment report conditions satisfactory and production and demand somewhat in excess of this period 1925.

Wholesalers of automotive accessories report that business in April was much better than that of March and better than April one year ago.

Hudson Sales at Peak

DETROIT, May 15.-According to William J. McAneeny, vice-president and treasurer of the Hudson Motor Car Co., retail sales of Hudson and Essex cars reached the highest point in the company's history, in April. Distributors, he said, reported sales to buyers totaling 35,000 automobiles, a 30 per cent gain over March and 50 per cent over April, 1925. The company anticipated its sales would be increased when the "at-yourdoor" policy was adopted in February, he declared, expressing pleasure with the public's reception of the plan. Yesterday, the 100,000th car built, this year, was shipped. It was the earliest that that figure has been attained in any year of the company's history.

Tire Inventories Gain

NEW YORK, May 15.—Large inventory increases feature the March statistical bulletin just issued by the Rubber Association of America, Inc. Inventories of high pressure inner tubes increased from 9,966,723 in February to 11,106,395 in March, balloon inner tubes increased from 2,850,865 to 3,241,677, high pressure cord pneumatic casings from 4,907,181 to 5,159,199, balloon casings from 2,487,498 to 2,626,745, fabric pneumatic casings from 978,152 to 1,217,416 and solid and cushion tires from 196,477 to 218,991.

BUGATTI WINS TARGA RACE



Constantini and car that won Sicilian road contest

PALERMO, Sicily, April 27.—(By Mail)—First three places in the annual 335½ mile race for the Targa Florio Cup have been won by Bugatti cars driven respectively by Constantini, Minoia, and Jules Goux. The race is considered the most difficult in the world, for the 67 mile circuit over the mountains comprizes 1400 distinct turns, varies in altitude from sea level to 3000 feet and is of such a nature that high gear can be used only for a distance of eight miles.

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Constantini averaged 45.6 miles an hour, set up a lap record at 46.8 miles and hour and on four out of his five laps broke last year's record. It is estimated that this represents the limit of speed over these roads, whatever the power available. Three Bugattis won 250,000 liras (practically \$10,400) in cash prizes, in addition to trophies.

Thirty-six cars faced the starter, but the real competition lay between the official team of straight eight Bugattis, having special roller bearing engines of 143 cubic inches piston displacement, driven by Constantini, Minoia and Goux; the four supercharged twelve-cylinder, 122-inch racing Delages, handled by Count Masetti, Rene Thomas, Divo and Benoist; and two sleeve valve Peugeots driven by Andre Boillot and Louis Wag-Among the notable independents and amateurs were Materasi on a special Itala built up with one half of a Hispano-Suiza aviation engine; Maserati with a straight eight supercharged 911/2 inch Maserati Special; and Andre Dubonnet with a 122 inch roller bearing Bugatti.

Although the Delage cars were the fastest on the course, they soon proved themselves unsuitable for these special conditions. There was disproportion between their power and adherence, they were slightly too long and difficult to hold on the turns.

Constantini took the lead on the first lap and held it throughout and after half the distance the positions of the

three leaders never varied. Sixteen miles from the starting line Count Masetti overturned with No. 13 Delage and died 10 minutes later from his injuries, before medical assistance could reach him. Masetti, who was a wealthy sportsman from Florence, was looked upon as one of the cleverest drivers in Europe and particularly brilliant on mountain roads.

Owing to a broken oil lead Andred Boillot was forced out with a seized sleeve on his Peugeot. Louis Wagner went off the road and lost 10 minutes in getting back again. Maserati broke one of his intake manifolds, thus losing half an hour.

Studebaker Sets Records

SOUTH BEND, Ind., May 15 .- America's two largest cities broke all records in the purchase of Studebaker cars during April. Retail deliveries in New York exceeded \$1,500,000, an increase of 36 per cent over April a year ago. Chicago ran a close second, with sales amounting to \$1,125,000, or 25 per cent more than for the same month last year. In both New York and Chicago, the April volume of sales was the largest of any month in history. Nor was this record Studebaker month confined to these two localities. Philadelphia, the third city of the United States, showed an increase of 14 per cent in deliveries over April, 1925. Los Angeles did the biggest April business in three years despite two weeks of record breaking rains. Other cities reported similar heavy gains.

Plan Greater Output

EVANSVILLE, Ind., May 15.—The automotive department of the Hercules corporation, builders of Ford, Chevrolet and Graham Brothers truck bodies, will build 3,500 bodies this month according to C. W. Sanford, plant superintendent. To meet this schedule the plant is producing 175 bodies a day with a force of about 900 men.

Car Makers Oppose Bill to Repeal Patent Laws

N. A. C. C. Official Declares There Is No Need for Such Extensive Change

NEW YORK, May 15.—House Bill 6249, which would repeal the design patent laws and substitute therefor copyright protection for industrial designs as a means calculated to speed up the machinery of design protection, is opposed by leaders in the automotive industry who have studied it and its possible effects.

It is believed that the bill if enacted would:

Seriously embarrass industry and harrass manufacturers and dealers.

Give less protection against infringement than is afforded by the present patent laws.

Make possible the copyrighting of designs not now entitled to protection.

Tend to create monoplies in trival articles which are now the property of any manufacturer who desires to produce them.

Encourage the issuance of copyrights to a number of individuals on substantially the same design, thus opening the way for almost endless litigation and creating such confusion that no manufacturer could be sure that the ownership of any design could be definitely established.

Robert A. Brannigan, manager of the patent department of the National Automobile Chamber of Commerce, sees no very salient outstanding defect in the present patent, trade-mark or copyright laws which would require them to be so extensively and radically changed.

Plan to Build Planes

DETROIT, May 15 .- The Stinson Aircraft Corp. will start manufacturing airplanes in a factory at Northville, Mich., in about two weeks, it was announced after a board of directors had been elected. The concern is incorporated for \$300,000. The airplane company will occupy the building formerly used by the Stimpson Scale Co. It has a floor space of 25,000 square feet. An adjacent field has been acquired for fabrication and testing of the planes. Directors of the corporation are: J. K. Livingstone of McNaughton, Livingstone & Griffin; Luther D. Thomas, president of the Fidelity Trust company; Richard Fitzgerald of Lybrand, Ross Brothers & Montgomery; Henry E. Hurd, capitalist; Frank W. Blair, president of the Union Trust Co.; Harry Graham, president of Owen & Graham; George M. Holley, president of the Holley Carburetor Co.; E. S. Evans, president of Evans, Winter, Hebb; Edward A. Stinson, designer and builder of the plane; William A. Mara, secretary aviation committee, Board of Commerce; George E. Buchanan, president of Buchanan & Huff Coal Co., and William E. Metzger, capitalist.

Italy Expects to Set New Records in 1926

Every Company Is Expanding Activity and Many Improvements Made

TURIN, Italy, May 1.—(By Mail)—Immense activity is being displayed in the Italian automobile industry and indications are that during 1926 Italy will attain record production figures. In contrast to this other European countries contemplate only a slight increase compared with 1925.

The Fiat Company at Turin is now producing 220 cars a day, which is the biggest output in Europe, and has plans in hand which will give it a production of 300 a day by the middle of the year. The new 7 h.p. model, with a four cylinder engine of 60 cubic inch piston displacement, is being turned out at the rate of 110 cars per day, and it is on this model that the greatest immediate increase is expected. Two bigger L-head models have been modified, the model 501 in particular, brought out immediately after the armistice, is now being produced with a Ricardo head, wider track, slightly longer wheelbase, balloon tires and front wheel brakes.

To cope with increased demand, a sixstory wing is being added to each end of the main factory building, the length of these being 666 feet in one case and 524 feet in the other, giving an additional floor space of 800,000 square feet. One of these wings is fully completed and in operation, while, the other is in an advanced condition.

A peculiarity of these wings is that each one has a spiral roadway from the ground to the roof, giving direct access to the roof test track without the use of elevators. The spiral roadway is sufficiently wide for two cars abreast and in addition has a raised footpath against the inner wall. While the practice is to test most of the cars on the roof track, 10 per cent of the production is sent on the road for special tests, these cars making use of the spiral road.

To avoid accidents an attendant operates a horn, which at the same time lights a series of red lamps whenever a car is starting up. Down traffic gives way to up-coming cars. The spiral roadway is also used for sending down chassis or finished cars for local delivery or for drive-aways. For foreign shipments cars are boxed on the fifth floor and lowered by a traveling crane direct to the freight cars inside the factory building. As they are assembled the chassis are moved up from floor to floor by a conveyor, to the exclusion of the use of the elevators.

A few months ago Fiat purchased the Spa Automobile Company of Turin and apparently intends to make use of these works for the production of trucks and motor coaches. The company has also purchased the world's rights for the

Pavesi pivoted agricultural and military tractor, the most successful vehicle of its type in Italy.

Increased production is reported by Lancia, which is paying more and more attention to trucks and motor coaches. Itala is increasing its output of the six cylinder 122 cubic inch model designed by Engineer Cappa. In addition, the firm is bringing out a purely sporting and racing type car, having 12 cylinders of only 67 cubic inch piston displacement. The car, designed by Engineer Cappa, has front wheel drive and embodies numerous original features. By boring out the cylinders a few millimeters, the piston displacement is increased to 91 inches, the rest of the car remaining unchanged. While costly to produce, it is believed that there will be a ready sale among sportsmen for this type of car, and according to information they will be seen on American tracks next year.

Isotta Fraschini is continuing on a single straight eight high-grade model, the output of which is being increased. According to statement, no change of policy is contemplated. Bianchi, of Milan, it is understood, will shortly stop production of automobiles and specialize on motor cycles and bicycles. Citroen and Peugeot are now assembling their smallest models in Italy for the Italian market.

Time sales were introduced in Italy about a year ago and are proving popular. An effort is being made to extend the home market, which has not been developed to the same extent as in neighboring countries. Probably more than in any other country in Europe, Italy has treated the automobile as an article of luxury or sport, but the tendency now is to develop the utility type of car.

Unfortunately there is not yet united action on road maintenance, and while road surfaces are generally good in the northern provinces, by reason of government, local or private initiative, some of the roads in the south are no better than those of the Middle West 20 years ago. It is practically impossible for the automobile to develop while these conditions remain. Speaking generally the argricultural classes in Italy have not yet been touched by the automobile, but the home firms, and particularly Fiat, are now turning their attention to this potential market.

Will Expand Plant

KOKOMO, Ind., May 15.-The Kokomo Automotive Manufacturing Co., of this city has started construction on a new factory building here. The building will cost \$50,000. The company, which manufactures automobile mirrors, windshield wings and other glass automobile specialties, expects to move from the present quarters about August 15. The new plant will provide double the space available in the present plant. This, together with the new machinery which has been designed by Neil T. Albright, president and general manager, and his staff, will double production facilities, according to a factory announcement. Much of this machinery, it is said, will be entirely new to the mirror and glass industry.

Carolina Trade Feels Resistance in General

Fair to Good Business Maintained, However, Despite Depression

CHARLOTTE, N. C., May 15.—The automotive trade in the Carolinas territory is definitely affected by the general resistance, which is greater in all lines of trade than in any corresponding season in recent years, though the automotive trade is maintaining a fair to good business, according to reports from the leading establishments in the several lines.

The business in April and in the early days of May was fair to good, it was reported by some of the dealers and distributors of automobiles, while other admitted the strong resistance is sharply reducing their sales. The so-called popular lines in each price class uniformly reported a good business in new cars, which, however, involves numerous used cars, for which it was said a fairly satisfactory market is being found.

Vigorous efforts on the part of salesmen for all concerns are required to make sales of new cars.

Similar resistance to sales is being experienced by the jobbers and dealers in accessories, equipments and supplies. These concerns recently began an extensive campaign, co-operating with the dealers throughout the territory in various ways, in a determined effort to improve business.

Some improvement, largely of a seasonal nature, was reported by the retail tire concerns. The motoring public is displaying a strong aversion to paying the present prices for tires. Some of the leading tire dealers here are forecasting that the public's resistance to prices will result in a relatively short time in a definite reduction in the quality of tires, with a proportionate reduction in prices.

Takes Kissel Distribution

ST. LOUIS, May 15.—The Kissel St. Louis Co. has taken over the distributorship of Kissel cars in this district from the Renaud Motor Car Co. C. Di Bartallo has joined the firm as vice-president and J. Ventimiglia as treasurer. Paul Rehan is secretary and general manager. The company has sales and service quarters at 3116 Locust street.

Establish Used Businesses

SEATTLE, Wash., May 15.—Two more used-car sales companies were added to Seattle's automobile row this week. I. L. Boling established an open air used-car sales floor at 416 East Pike, with specially designed lighting effects to make night-buying as practical as day-buying. Charles B. Haynes has established a company to sell used cars, and has leased the building at 310-312 East Pike St. The new company is known as the Chas. B. Haynes, Inc.

Cleveland New Car Sales Gain Heavily Over 1925

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First Four Months Show 42
Per Cent Increase in
Bills of Sale

CLEVELAND, O., May 15.—The remarkable pace at which the retail automobile business has been moving is indicated in statistics for the first four months of the year compiled by the Cleveland Automobile Manufacturers' and Dealers' Association.

There has been an increase of 42 per cent in the bills of sale for new cars filed with County Clerk George S. Wallere here

Part of this increase is traceable to operation of new legal requirements bringing about quicker filing of these documents, and the increase in demand during the first months of the year is borne out by reports from individual distributors

The bills of sale for new cars filed in April ran 5,527, as compared with 4,203 for April, 1925. The preceding months for 1926 rans as follows: January 1,727, February 2,164 and March 3,565. The corresponding months of the year preceding totaled: January 1,053, February 1,295 and March 2,564.

This makes totals for the first months of the year of 12,983 for the current year compared with 9,115 for 1925.

"This splendid record has been established in the face of conditions considered unfavorable to the business," said Herbert Buckman, manager of the association. "Were it not for the backward spring weather and similar conditions, even greater increases might have been recorded. This business delayed by such conditions should carry the coming months to unusual degrees and shortage in favored models may be anticipated."

Finds France Steady

DETROIT, May 8.—V. R. Heftler, president of the Zenith-Detroit Corp., home from a six weeks stay in France, brings reports of steady business conditions in the European republic. There is no unemployment in France at the present time and wages among the working class are still at a high level. In the Zenith factory at Lyon, all departments are working full time and some are compelled to operate both day and night.

21 in Grand Prix

PARIS, May 1.—(By Mail)—Twentyone cars have been entered for the European Grand Prix 91½ cubic inch automobile race to be run at San Sebastian, Spain, on July 25. The cars are 3 Delage, 3 Talbot, 3 Bugatti, 3 O. M., 4 Sima-Violet, 2 Guyot Special, 2 Jean Graf, and an Eldridge Special. Contrary to expectations, the Fiat Company has not entered for this race, but it is understood the firm's new two-stroke racing jobs will

be ready for the Italian Grand Prix race on Monza track, near Milan next September.

Attracts Used Car Buyers

NEW YORK, May 15.—Something new in used car advertising, at least in this section, is appearing in the Brooklyn Eagle every Sunday. It is an adaption of "The Inquiring Reporter" features which have appeared in many newspapers and in which the questions asked by the reporter are answered by persons hailed by him at random. The Eagle "Inquiring Used Car Photographer," each week visits the showrooms of several leading automobile dealers in Brooklyn and Manhattan and asks each dealer to present, in photographic form, what he considers the one best used car buy on his floor. The paper then shows the pictures and other matter advertising ten used cars.

Paige Shipments Gain

DETROIT, May 15.—Shipments of the new Paige models, introduced in February by the Paige-Detroit Motor Car Co., were 470 per cent greater in April than in the same month of 1925, the total reaching 2,998 cars. During the first four months of 1926, the number of Paiges shipped totaled 9,367, nearly four and a half times as great as the shipments in 1925 for the same period.

Velie Chooses "Styleader"

MOLINE, Ill., May 15.—Out of over 250,000 name suggestions received by the Velie Motors Corporation on the name contest on the sloping windshield model, the judges have selected the name "Velie Styleader" as being the most fitting name for this model. The winner of this car is Mrs. Henry Leibrandt, 406 Madison St., Watsonville, Cal., and the car will be presented to Mrs. Leibrandt within the next few days.

Oakland April Business Again Smashes Records

PONTIAC, Mich., May 15.—The Oakland Motor Car Co., in April, again smashed all previous monthly records for manufacture and shipments of cars, with 13,358 Oakland and Pontiac automobiles passing into the hands of dealers. In March, shipments totaled 12,019 cars.

The factory produced and shipped as many automobiles during the months of March and April as they did during the first eight and one half months of 1925. For the first four months of 1926, a total of 39,305 cars have been shipped to dealers.

Oakland shipments for the first four months of 1926 were 95 per cent greater than for the corresponding period of 1925. During the same period, Pontiac was breaking all previous records for the first four month's production of a new make of car. Foreign shipments of Pontiacs began during April. Oakland foreign shipments are averaging 400 cars a month

Spokane Stocks Depleted By Heavy April Demand

Some Firms Completely Sold Out by Middle of Month and Work on Used Cars

SPOKANE, Wash., May 15.—The month of April was marked by heavy car sales, the outstanding feature in the sales, as indicated by registration figures for Spokane county, being that Ford sales dropped to second place for the first time in many months. Chevrolet new cars sales were 114 compared with 106 Fords.

Indicative of the strong demand for cars is the situation the Transport Motor Company, Overland and Willys-Knight distributor, found themselves in shortly after the middle of the month. Its entire stock of new cars was sold out and for a time, until shipments began to arrive towards the close of the month, its large new car sales floor was stocked with used cars while the entire sales force was given instructions to concentrate as much as possible on used car sales.

Associate dealers of this organization also found themselves short on stock. A shipment of 14 carloads the first days of May replenished the stock in all models, including the new Overland six coupe.

Total new car sales during the month were 627; 31 makes being represented. Used car sales were 790 with 45 makes represented. New truck sales were 67 with 11 makes represented and used truck sales were 129 with 18 makes represented.

Nash-McLarty Reorganized

DALLAS, Tex., May 15.—Reorganization of the Nash-McLarty Motor Company here with the formation of the McLarty-Filgo Company was announced by F. E. McLarty this week. Mr. McLarty, for the last nine years Nash distributor in the Dallas territory, will devote his entire time to the wholesale end of the business. L. R. Filgo, who is now president of the Nash-Filgo company, will have charge of the retail end of the business in Dallas. Mr. Filgo gave up the distributorship of the Paige-Jewett lines to become associated with Mr. Mc-Larty in the new venture. The new company will also take over the Oak Cliff Nash company.

Cleland Goes to Dallas

DALLAS, Tex., May 15.—Announcement was made by N. E. Darby, general salesmanager for the Auburn Automobile Company, that C. B. Cleland has been named southwestern district manager for the company with direct supervision over the Dallas Auburn company. Mr. Cleland comes to Dallas from Chicago where he has been associated with the automotive trades for the last 10 years. He announced he would begin pushing sales operations for the Auburn lines in Dallas immediately.

TRADE ASSOCIATION ACTIVITIES

S. A. E. WILL HEAR BRISBANE

Famous Newspaper Writer Will Be Headliner Night Before Race

INDIANAPOLIS, May 15.—Arthur Brisbane, one of the world's foremost newspaper writers, widely known for his syndicated editorials and crisp, witty philosophy, will be the headliner of the Indiana Section S. A. E. welcoming dinner to be given "the night before the 500 mile race" at the Indianapolis Athletic Club to visiting members of the S. A. E. who plan to attend the 500 mile race and the summer meeting that follows the race at French Lick Springs June 1 to 4.

Invitations to the affair will go out to a list of people in Indianapolis the week ending May 15, and the S. A. E. Journal has already carried the invitations to the members of the society. "All automo-tive men who will attend the 500 mile race are also cordially invited," according to George T. Briggs, section and dinner committee chairman. "Those who desire to go and have not yet received word of the affair may reserve places at the tables by writing to George T. Briggs, Wheeler-Schebler Carburetor Company, Indianapolis. The dinner tickets are \$3.50 each, and as the accommodations of the main dining room of the Indianapolis Athletic Club will not serve much more than 600 places there is some need for haste. Adjoining rooms will accommodate more guests, but early applicants of course will get the choice places, though all guests will able to hear."

Though Arthur Bribane's speech will be the great thing of the dinner the popular and witty C. H. Kettering of the General Motors research laboratories will also make a talk as will Capt. E. V. Rickenbacker and Judge Solon J. Carter of Indianapolis.

Section officials notify all and sundry that tickets for seats at the speed fest cannot be obtained, at this late date, unless the ticket speculators are patronized. How many they have no one knows

Glynn Heads Section

NEW YORK, May 15.—F. K. Glynn of the American Telephone & Telegraph Co. is the new chairman of the Metropolitan Section of the Society of Automotive Engineers. Other officers elected for the ensuing year are C. B. Veal, Manly & Veal, vice-chairman, E. F. Lowe, K-T Products Co., treasurer, and H. M. Rugg, Vacuum Oil Co., secretary.

Service Committee Meets

NEW YORK, May 15.—The special service equipment committee of the Motor & Accessory Manufacturers' Association met at association headquarters today with Neal G. Adair, manager of the educational department, and discussed plans for a distribution survey and a tentative program for the service equipment sections of the two national shows next January.

This program consists of what service equipment manufacturers would like to do at the shows, and before final action is taken it will be discussed with Samuel A. Miles, manager of the shows, when he returns from his automobile tour of France.

The service equipment committee includes R. W. Procter of Black & Decker Mfg. Co., Fred G. Wacker of Automobile

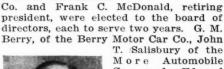
Maintenance Machinery Co., H. M. Smith of Manley Mfg. Co., Martin E. Goldman of the Forest Electric Co. and B. M. Asch of Asch & Co.

St. Louis Elects Weber

ST. LOUIS, May 15.—George Weber, president of the Weber Implement and Automobile Co., Hupmobile distributor, was elected president of the St. Louis Automobile Dealers' Association at the annual meeting of that organization at

Claridge Hotel. Guy W. Oliver, president of the Oliver-Cadillac Co., was elected vice-president and Walter H. Vesper of the Vesper - Buick Automobile Co., was re-elected treasurer. Robert E. Lee remains manager and secretary.

A. E. Archer of the McCarthy-Archer Co., J. D. Perry Lewis of the Lewis Automobile



More Automobile
Co., and Edward
Weber of the Weber
Motor Car Co. are
the holdover directors each with one
more year to serve.

George Weber

The election of Weber as president was by acclamation as William L. Johnson of the Johnson Automobile Co., who had been nominated by the committee

Guy W. Oliver to oppose Weber, Automobile Co., who had been nominated by the committee to oppose Weber, wired from Florida, where he is on vacation, declining the nomination.

Lynn W. Shaw, assistant general manager of the N. A. D. A., addressed the meeting on cost accounting, used car sales in dealer establishments and the flat-rate piece work system in maintenance departments.

Peoria Elects Directors

PEORIA, Ill., May 15.—At the annual meeting of the Peoria Automotive Trade Association, 375 dealers in motor cars and accessories were present. Reports of the year's activities were read by President E. R. Malehan. New directors were selected in E. R. Malehan, A. G. Thede, R. F. Graham, and C. A. Roadstrum. Officers will be elected at the next meeting. The principal address was given by Harry T. Gardner, general manager of the Cincinnati Automobile Dealers' Association.

Eldridge Heads Air Chapter

SEATTLE, Wash., May 15.—A. S. Eldridge, president of the Eldridge-Buick Corporation of this city, was named president of the newly organized Seattle Chapter of the National Aeronautic Society. Frank Fretwell was named vice-president, Valentine Gephart, secretary, and Raymond Sharp, treasurer.

COLLINS SPEAKS AT CLEVELAND

Publisher Tells of Value of Dealers in Automobile Business

CLEVELAND, May 15.—An address by James H. Collins, vice-president of the Chilton Class Journal Company, Philadelphia, featured the annual spring meeting in Hotel Hollenden of the Cleveland Automobile Dealers' and Manufacturers' Association. Approximately 125 association members attended.

Taking for his general theme, "The Immense Value of Dealers to Car Manufacturers," Collins used several charts to

expound upon his subject.

He pointed out that in 1919 there were 43,309 accessory wholesalers and retailers in America. The number in 1925, he said, had increased to 63,902, indicating he said that the once weakness in this business—a lack of dealers—was disappearing.

The profit for the 1926 output of automobiles was estimated by Collins as \$7,-200,000,000, a material increase over

profits for 1925.

Collins was introduced by Herbert Buckman, manager of the association, who acted as chairman.

Adopts Association Flag

OAKLAND, Cal., May 15.—The Service Station Owners' Association of the Pacific coast has adopted a checkered flag as its emblem, and is drawing up a code of ethics under which motorists may be assured that they will get fair treatment and goods as labeled at the service stations owned and operated by members, according to A. B. Morris, secretary af the association. Membership is limited to operators of privately-owned service stations.

Two New Bureaus Formed

ST. LOUIS, May 15.—Two important bureaus have recently been formed by members of the Automotive Accessory Association of St. Louis. The first is the replacement parts bureau, members of which are selected from St. Louis firms which deal exclusively or largely in replacement parts for motor cars. Charles A. Marion of the H. & H. Machine Co. is chairman of this bureau and W. T. Mills of the Auto Parts Co. is vice chairman.

The other bureau is known as the jobbers' bureau, its members being exclusively jobbing houses which are members of the Automotive Accessory Association. George L. Niekamp of Beck & Corbit Iron Co. is chairman of this bureau and Frank Quan of the Fred Campbell Supply Co. is vice chairman.

Urge Attractive Stations

DALLAS, Tex., May 15.—The Independent Service Stations Association of Dallas, with the co-operation of the Chambers of Commerce over the state, has inaugurated a move for more attractive filling stations in Texas this year. The effort to have filling stations more attractive is being made with a view impressing motor visitors more favorably with Texas. Cash prizes are to be awarded for the 10 most attractive filling stations in the state at the end of the campaign. The winners will be determined by pictures of the places before the "tidyup" campaign began and after the stations were "put in order."



Jordan Says Car Would Solve Europe's Problems

Declares Levelizing Influence of Automobile and Telephone Is Greatest Aid

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PORTLAND, Ore., May 15.—Two million automobiles and 2,000,000 telephones will do more to settle the European situation than a whole army of bemedaled dipolmats sitting at tables and discussing debt settlements and political crises.

So says Edward S. Jordan, president of the Jordan Motor Car Company at his address before the Progressive Business men's Club here.

"The transportation business is the greatest business in the world today," said Mr. Jordan. "The civilization of every nation has been measured largely with the cost of transportation.

"Our advertising copy is written as it is because we have to compete with reading matter to attract attention. Too much of the current advertising copy of today is written as were the first advertisements—by ministers and school teachers who were the only educated people of their time.

"I have read much of the current books on scientific salesmanship and have reached the conclusion that to be a successful salesman one must be able to speak the English language, speak it distinctly, speak it truthfully and see enough people."

The average American business man does not apply enough mental effort to conducting his business, Mr. Jordan declared. He thinks in superficialities and not in the essentials of his business. He gets too many of his ideas of the proper way of conducting his business from the man across the street or from his fellow traveler in the smoking car, he said.

Cleary in Miami

MIAMI, May 15.—John A. Cleary, formerly director of advertising and sales promotion for the Cadillac Motor Car Company, Detroit, and the Peerless Motor Car Company, Cleveland, has been appointed Florida branch manager of the Dorland Advertising Agency, with head-quarters at 914 Olympia Theatre Building, Miami. He has been conducting his own advertising business in Miami during the last year.

Jobbers Combine Forces

DALLAS, Tex., May 15.—The Spencer Company, one of the largest automotive jobbing houses in the southwest has been combined with the Schoellkopf Company, a saddlery and harness manufacturing and jobbing house and jobbers of automobile tops, curtains, seat covers and upholstery. The Schoellkopf company bought the Spencer company stocks, accounts, good will and assets. H. E. Spencer, for years president of the

Coming Motor Events

Automobile Shows

1927 NATIO	ONAL SHOWS
New York	Jan. 8-15
New YorkChicago	Jan. 29-Feb. 5
Fargo, N. D	July 12-17
Denver Colo	A119 3-6

Denver, Colo......Aug. 3-6

New York......Sept. 13-18

(Radio World's Fair)

Chicago......Nov. 15-19

(Annual show and convention of National Standard Parts Association.)

Races

Indianapolis, IndMay	31,	1926	
Altoona, PennsylvaniaJune	12,	1926	
Salem, New HampshireJuly	5,	1926	
Atlantic City, N. JJuly	17,	1926	

Altoona, PennsylvaniaSept	. 6,	1926
Salem, New HampshireSept.	25,	1926
Atlantic City, N. JOct.	23,	1926
Charlotte, N. CNov.	11,	1926
Los Angeles, CalNov.	25,	1926

Conventions

National Motor Regrinders' & Rebuilders'
Association, annual, Indianapolis,
May 28-29.

Automobile Body Builders' Association, annual, Hotel Statler, Detroit, June 8-10. Exhibition in connection.

Automotive Equipment Association summer convention, Mount Royal Hotel, Montreal, Canada, June 14-19.

American Electric Railway Association, 45th annual, Cleveland, O. Oct. 4-8. Exhibition in connection.

Spencer company, goes with the new organization as general manager of the automotive equipment and supply department. It is announced the automotive business will be continued at the old Spencer stand for the present and later will occupy two entire floors in the eight story building of the Schoellkopf company.

Opens New Home

MEMPHIS, May 15.—With the finishing touches from the contractors and architects still in progress, the new addition to the Hull-Dobbs Co., Ford dealers, was opened with a gala reception to which the Memphis public was invited. The addition represents five years of progress. Concrete, steel and face brick, two stories with a roof that also may be used, and strength for four floors more are features of the place.

A. E. A. Holds 3 More Merchandising Meets

CHICAGO, May 15.—Automotive Equipment Association merchandising meetings were held last week in Topeka and Wichita, Kan., and Indianapolis. Two hundred dealers attended the Topeka meeting, arranged by the Southwick Auto Supply Co., jobber, and heard M. D. Graham, A. E. A. representative, deliver a stirring merchandising message. Wichita Mr. Graham addressed three gatherings in one day. These were the combined sales forces and executives of A. E. A. members in Wichita, consisting of Johnson Bros. Auto Supply Co., Massey Hardware Co. and Motor Equipment Co.; the Wichita Motor Trade Association, and 100 dealers invited by the A. E. A. members. Arthur R. Mogge, merchandising director of the A. E. A., addressed 150 owners of service stations affiliated with the Hoosier State Automobile Association in Indianapolis.

Dodge Bros. Dealers Meet

SAN ANTONIO, Tex., May 15.—More than 100 Dodge Brothers dealers from all sections of south and southwest Texas were guests at the Wroten-Hungley Motor Company this week at a "get-together" conference attended by Roy Heilman, divisional sales manager of Evansville, Ind., and E. Gordon Perry, distributor for the Dallas territory. Sales methods, advertising, servicing and keeping cars sold were the chief topics discussed. The Evansville manager discussed factory plans and told the dealers they would have no trouble in getting cars and that the standard had been maintained despite deep cut in prices.

Buys Flint Franchise

SAN BENITO, Tex., May 15.—W. H. Hently, Dodge Brothers dealer here and at Mercedes, has bought the Flint franchise for the San Antonio territory. He will maintain his agencies here and at Mercedes but will move to San Antonio to take active charge of the Flint organization. M. A. Brown will be sales manager for the Flint organization at San Antonio, it is announced. The Flint cars were formerly handled by the Orisinger Motor company in San Antonio.

New Peerless Dealers

CLEVELAND, May 15.—Sixteen new dealers have been signed by the Peerless Motor Car Corporation according to announcement made this week. They are:

nouncement made this week. They are:
Reilly Brothers, Portsmouth, Ohio; Milton J. Hauck, Jackson, Mich.; Potthoff Brothers Motor Co., St. Paul; W. J. Faucheux Auto Co., Latcher La.; George Genthe, Wyandotte, Mich.; Gerardo O. Salinas, Managua, Nicaragua; Rodney Street Garage, Wilmington, Del.; Wickersham Hdw. Co., Jamestown, Ohio; Lanford Motor Car Co., Miami, Fla.; W. A. Murray, Ithaca, N. Y.; N. W. Conger, Warsaw, N. Y.; C. A. Merkel, Inc.; Rochester, N. Y.; Mission Garage, Redlands, Cal.; K. & E. Auto Shop, Ashland, Ala.; Silverman & Lefkowitz, Franklin, La.; McIntyre Motor Co., Sharon, Pa.

Prices and Weights of Current Passenger Car Models

				8	
	BODY STYLE. PR	RICE	SHIP WT. PASS. BODY STYLE. PRICE CHRYSLER (Continued)	SHIP WT. PASS. BODY STYLE. PRICE	SHIP WT. PASS. BODY STYLE. PRICE
AJAX 2210 5-p	Touring	\$865	3060 5-p Sedan 1,545	2900 5-p Coach 1,195	" E -2"
2410 5-p	Sedan	995	2935 4-p Royal Coupe 1,695 2995 5-p Brougham 1,745	2779 5-p Sedan 1,295	3255 5-p Touring 1,945 3362 7-p Touring 2,045
AUBURN "		1.14F	3085 5-p Royal Sedan 1,795 3090 5-p Crown Sedan 1,895	"6-65"	2-4-p Roadster 2,045 3465 4-p Coupe 2,345
5-p 5-p	Roadster	1,145	"80"	5-p Touring 1,295 4-p Roadster 1,495	3500 5-p Sedan 2,345 3580 5-p Berline 2,445
5-р	Coupe Sedan	1,175 1,195	(185½ in.*) 3775 5-p Phaeton 2,645	2779 5-p Coach 1,395 3-p Coupe 1,495	JEWETT
	"6-66"		3730 4-p Roadster 2,885	2900 5-p Sedan 1,595 "8-81"	"New-Day" 5-p Touring DeL. \$1,095
2850 4-p 2860 6-p	Sport-Roadster Touring	1,395	(192½ in.*)	4-p Roadster 2,315	5-p Sedan 995
3020 5-p	Coupe Brougham	1,445	4015 4-p Coupe 3,195 (1981/4 in.*)	3000 3-p Coupe 2,265 2,195	JORDAN
3070 5-p 3070	Sedan	1,695 1,745	4225 7-p Sedan Lim, 3,695	4-p Coupe 2,095 5-p Sedan 2,265	"J" 2915 4-p Playboy Road, \$1,845
	"8-88"		*Overall length.	4050 7-p Sedan 2,765	3200 5-p Sedan 1,945
3180 4-p	Sport-Roadster		CLEVELAND "31" 2415 5-p Touring \$945	ESSEX 2290 5-p Touring	4-p Victoria 1,945 Series "A"
3200 6-p 3-p	Touring	1.695	2565 5-p Tour'g DeLuxe 1,025 2520 3-p Coupe 1,035	2455 5-p Coach \$789* *Delivered, Detroit. Mfrs. do	3340 5-p Touring 2,275
3380 5-p 3450 5-p	Brougham Sedan	1,745 1,795 1,995	2695 5-p Sedan 1.090	not quote F. O. B. prices.	3525 5-p Sedan 2,675
3450	Wanderer	2,045	2795 5-p De Luxe Sedan 1,250 "43"	FLINT "Z-18"	3470 7-p Sedan 2,675 KISSEL
7-р	Sedan Sedan	2,495	2800 5-p Touring 1.145	2497 5-p Coach 1,085	"55"
	Standard "6"		2975 5-p Sp. Touring 1,295 2915 3-p Coupe 1,225	"B-60"	3130 2-p Speedster \$1,795 2-p Sp'dster DeL. 2,085
2845 2-p 2955 5-p	Touring	1,125 1,150	3145 5-p Sedan 1,345	2683 4-p Roadster 1,395	4-p Speedster 1,895
3020 2-p 8150 5-p	Coupe 2 d. Sedan	1,195 1,195	CUNNINGHAM "V-6"	2708 5-p Touring 1,285 4-p Coupe Roadster 1,495	3530 2-p Enc. Speedster 2,085 2-p Enc. Spd. DeL. 2,585
\$110 4-p \$230 5-p	Coupe	1,275 1,295	4500 4-p Sp. Touring \$6,150	3093 5-p Sedan 4d. 1,525 2933 5-p Brougham 1,525	4-p Enc. Speedster 2,185 4-p Enc. Sped. DeL. 2,685
	"Master"	1,200	4600 7-p Touring 6,650 4700 4-p Coupe 7.600	"E-80"	3190 4-p Tourster 1,795
	20 in. W. B.)	1.05	5000 6-p Limousine 8,100	(120 in. W. B.)	2980 5-p Phaeton 1,585
3350 2-p 3515 5-p	Touring	1,250 1,295	DAGMAR "6-70"	3139 4-p Sport Road, \$1,945 3189 5-p Touring 1,595	3170 5-p Phaeton DeL. 1,785
\$670 5-p \$765 5-p	2 d. Sedan	1,395	3750 4-p Roadster \$3.500	3310 4-p Sp. Touring 1,945 3414 4-p Coupe 2,045	7-p Touring DeL. 1,885
(1	128 in. W. B.)		3700 4-p Phaeton 3,500	3529 5-p Sedan 2,195 (130 in. W. B.)	3430 4-n Coune 2.085
3570 4-p 3635 5-p		1,495 1,525	4200 4-p Petite Coupe 4,500 4200 4-p Petite Sedan 4,500	3294 7-p Touring	3540 5-p Broug. Sedan 1,995 5-p Brg. Sed. DeL. 2,485
8805 3-p	Country Club	1,765	4500 4-p De Luxe Coupe 4,750	3649 7-p Sedan 2,395	5-p Brougham 2d. 1.695
3855 4-p 3940 5-p	Coupe Brough, Sedan	1,795	4800 7-p Sedan 4,750	FORD Without Starter and Dem. Rims	4010 7-p Ber. Sed. DeL. 3,185
4025 7-p	Sedan	1,995	"6-60"	1526 2-p Runabout \$290	3530 5-p Victoria 2,185 5-p Victoria DeL. 2,485
CADILLAC "314	" Standard Line		3100 2-p Roadster 1,985	1557 With Balloon Tires 335 1607 5-p Touring 310 1640 With Balloon Tires 355	"75"
(1	132 in. W. B.)	*0 00"	3200 4-p Sp. Touring 1,985 3500 5-p Sedan 2,445	1640 With Balloon Tires 355	2-p Speedster 2,195 2-p Speedster DeL, 2,485
4110 5-p 4125 4-p	Victoria	\$2,995 3,095	DAVIS	With Starter and Dem. Rims 1645 2-p Runabout 375	A-n Chandston 9905
4040 2-p 4210 5-p	Coupe Sedan	3,045	"92" 2660 4-p Roadster \$1,495	1655 With Ralloom Tires 400	4-p Speedster DeL, 2,585 2-p Enc, Speedster 2,485 2-p Enc, Spe. DeL, 2,895 4-p Enc, Speedster 2,585
4315 7-p 4380 7-p	Sedan	3,295	2915 5-p Legion. Tour. 1,495 3000 5-p Sedan 1.595	1738 With Balloon Tires 420 1851 2-p Coupe 500	4-p Enc. Speedster 2,585 4-p Enc. Spd. DeL. 3,085
_	Custom Built	5,200	3060 5-p Imperial Sedan 1,795	1851 2-p Coupe 500 1860 With Balloon Tires 525	4-p Enc. Spd. Del. 3,000
	(132 in.)	** ***	"93"	1728 5-p Touring 395 1738 1851 2-p Coupe 500 1860 With Balloon Tires 525 1961 5-p Sedan, Tudor 520 1972 With Balloon Tires 545	4-p Tourster DeL, 2,385
4065 2-p	Roadster (\$3,250	2500 5-p Sedan 1,285	1994 5-p Sedan, Fordor 565 2004 With Balloon Tires 590	5-p Phaeton DeL, 2,185
4125 7-p	Touring	3,250	2450 3-p Coupe 1,285 DIANA "St. 8"	FRANKLIN	7-p Touring DeL. 2,285 Coupe Roadster 2,095
4100 5-p 4300 5-p	Coupe	3,250 4,000	2995 5-p Roadster \$1.795	"11" 2800 3-p Sport Road, \$2,690	4-p Coupe De Luxe 2,885
4300 5-p 4400 7-p	Sedan Suburban	4,150 4,285	3170 5-p DeL Brougham 1,995 3275 5-p De Luxe Sedan 2,195	2845 5-p Touring 2,635 2965 3-p Coupe 2,645	5-p Broug. Sedan 2,395 5-p Brg. Sed. DeL. 2,985
.4450 7-p		4,485	3160 5-p Cabriolet 2005	3-5-p Coupe 2,760	
CASE	J. I. C.		3640 7-p Sedan (135 in W. B.) 2,695 3640 7-p Berline Sedan 2,895	4-p Victoria 2,790	7-p Berl. Sed. DeL. 3,585
3260 3-p 3290 5-p	Roadster	\$1,840 1,885	5-p Town Car.	5-7-p Sedan 2,840 5-p Oxford Sedan 2,865	7-p Victoria DeL. 2,885
3470 5-p 3640 5-p	Sp. Touring	2,160 2,590	DODGE BROTHERS	3080 5-p Sport Sedan 2,910 3275 7-p Limousine 2,990	LEXINGTON "6-50"
3650 5-p	Brougham	2,590	2448 2-p Roadster \$ 795 2538 2-p Special Roadster 845	3135 7-p Cabriolet 4,400	2950 3-p Roadster \$1,895
	"Y"		2567 5-p Touring 795	GARDNER 6B	3425 5-p Sedan 2,245
3950 7-p 4320 7-p	Touring Sedan	2,225 2,975	2497 2-p Sport Roadster 880 2617 4-p Sport Touring 880	3070 4-p Phaeton \$1,395 3030 4-p Roadster 1,395	3425 5-p Landau Sedan 2,243 3400 5-p Laudaulet on appl.
CHANDLE	ER "35"		2589 2-p Coupe 845 2632 2-p Spec. Coupe 895	3290 5-p Brougham 1,545	LINCOLN
3090 2-p 3085 5-p	Roadster	\$1,695 1,545	2811 5-p Sedan 895	3210 4-p Cabriolet 1,695 3280 5-p Imp. Sedan 1,695	4460 2-p Roadster \$4,000 4580 7-p Touring 4,000
3223 7-p	Touring	1,645	2883 5-p Spec. Sed. 945 2920 5-p DeL. Sedan 1,075	8B	4565 4-p Phaeton 4,000 4780 4-p Sport Phaeton 4,900
3498 5-p 3309 5-p 3595 5-p	Brougham	1,590 1,695 1,895	DUESENBERG	3350 4-p Phaeton 1,795 3350 4-p Sp. Roadster 1,795	4750 4-p Coupe 4,000
3525 5-p 3594 7-p	Met. Sedan Sedan	1,995	Straight "8"	3620 5-p Brougham 1,895 3480 4-p Cabriolet 2,095	4760 5-p Sedan 4,900 4890 7-p Sedan 5,100
3594 7-p	Berline	2,095	3920 2-p Roadster † 3970 4-p Roadster	3620 5-p Imp. Sedan 2,095	4945 7-p Limousine 5,300
1780 2-p		\$510	3700 5-p Phaeton \$6,650 3980 4-p Sp. Phaeton †	3940 7-p Sedan 2,795	LOCOMOBILE
1875 Б-р	Touring	510	4115 5-p Sedan † 4500 7-p Sedan †	GRAY "S"	3100 2-p Roadster 2,150
2030 2-p 2130 5-p 2215 5-p	Coach	645 645	†Manufacturers do not quote	1755 5-p Touring \$595 2055 5-p Sedan \$845	3000 5-p Touring 1,766 3250 4-p Coupe 2,266
2215 5-p 5-p		735 765	list prices.	HERTZ	3400 5-p Sedan 2,28 3350 5-p Brougham 2,28
CHRYSLE	ER "58"		DU PONT "D" 3300 2-p Roadster \$2,600	"D-1"	"90"
2265 2-p 2300 5-p	Touring	\$890 845	3550 5-p Touring 2,600	3800 5-p Sedan	4660 4-p Sportif Tour. 5,500 4600 4-p Roadster 5,900
2405 2-p 2510 5-p	Club Coupe Coach	895 935	3550 5-p Touring Sedan 3,400	HUDSON "Super Six"	4980 4-p Coupe 6,981 5040 5-p Victoria Sedan 7,301
2570 5-p	p Std. Sedan	995	DURANT A-22	3365 7-p Phaeton	5-p Sed. (divided) 7.50
5-r	"60" Touring	\$1,075	2300 5-p Touring \$ 730	3405 5-p Coach \$1,209* 3495 4-p Brougham 4d, 1,464*	5105 7-p Suburban 7,500
******	Roadster	1,145	2380 5-p Spec. Touring 805 2450 4-p Coupe 825	3645 7-p Sedan 1,695* *Delivered, Detroit. Mfrs. do	"48"
5-r	p Coach	1,165 1,195	2480 4-p Spec. Coupe 875 2650 5-p Sedan 880	not quote F. O. B. prices.	5280 4-p Sportif Tour. \$7,46
5-I		1,295	2710 5-p Spec. Sedan 995	нирмовиле "д"	5640 7-p Touring Lim. 9,50
2805 4-p		\$1,525	ELCAR "4-55"	2620 5-p Touring \$1,325	5630 5-p Victoria Sedan 10,04 5464 7-p Brougham 10,04
2785 5-1 2895 5-1	p Phaeton	1,395 1,395	2560 5-p Touring \$1,095 4-p Roadster 1,295	2800 5-p Sedan 1,385 4-p Coupe 1,385	5868 7-p Enc. Dr. Lim. 10,00
2000 0-1	o Coacii	1,000	1-p 1.00005101 1,200		

Prices and Weights of Current Passenger Car Models

E. PRICE

\$1,795
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\$1,895 2,245 2,245 2,245 2,245 8ppl. \$4,000 4,000 4,000 4,900 4,800 4,900 5,100 5,300

2,150 1,785 2,265 2,285 2,285 5,500 5,900 6,900 7,500 7,500 7,500 7,500 7,500 10,000 10,000 10,000 10,000

Age

SHIP	CUID		
WT. PASS. BODY STYLE. PRICE McFARLAN "6" "SV"	OVERIAND (Continued)	SHIP WT. PASS. BODY STYLE. PRICE REVERE	SHIP WT. PASS. BODY STYLE. PRICE STEARNS KNICHT
3700 2-p Roadster \$2,650 2-p Spec. Roadster 2,900 3600 5-p Touring 2,650 7-p Touring 2,750	2205 5-p Sedan De Luxe 695 "93" 6 2395 5-p Touring \$895 2397 2-p Coupe	3900 2-p Sp. Roadster \$2,750 3975 4-p Speedster 2,750 4050 5-p Touring 2,750 4300 5-p Sedan 3,800	STEARNS-KNIGHT (Continued) 3735 5-p Touring \$2,395 4035 5-p Sedan 2,750 4035 5-p Brougham 2,750 4020 4-p Coupe
5-p Brougham 4d. \$3,180 3850 4-p Coupe 3,180 3850 5-p Sedan 3,180 5-p Spec. Sedan 3,180	2443 4-D Std. Sedan 935 2584 5-D Sedan De Luxe 1,095 PACKARD "6"	3700 2-p Roadster \$3,200 3800 4-p Sportster 3,200 3970 5-p Touring 3,200	4020 4-p Coupe 4090 5-p Sport Sedan 3,050 4200 7-p Sedan 3,150 STUDEBAKER
3850 7-p Sedan 3,280 5-p Sub. Sedan 3,380	(126 in. W. B.)	RICKENBACKER	Standard Six 2760 3-p Du. Roadster \$1,125
7-p Sub. Sedan 3,480 "TY" 4000 2-p Roadster \$5,400 4000 4-p Sp. Touring 5,600	3653 5-p Phaeton 2,585 3753 4-p Coupe 2,585 3937 5-p Sedan 2,585	3038 5-p Touring \$1.750 3068 7-p Touring 1.795 2953 4-p Roadster 1.795 3116 5-p Coupe-Sedan 1.695	2870 5-p Du. Phaeton 1,145 2945 3-p Country Club 1,295 2980 5-p Coach
4900 4-p Coupe 5200 4-p Tour. Sedan 6,720 5200 7-p Tour. Sedan 6,810 6-p Sedan 6,720	(133 in. W. B.) 3793 7-p Touring \$2,785 4043 7-p Sedan 2,785 Club Sedan 2,725	3092 4-p Brougham 1,895 3094 4-p Coupe Roadster 1,920 3040 4-p Coupe De Luxe 1,995	3260 5-p Sedan 1,295 1,395 Special Six
7-p Sedan 6,810 Spec. Sedan 6,810 7-p Enc. Sedan 7,110 7-p Sub. Sedan 7,110	4133 7-p Sedan Lim. 2,725 "8" (136 in. W. B.)	3353 7-p Sedan 2,195 "B-8" 3227 4-p Roadster \$2.195	3500 4-p Sp. Roadster \$1,395 3495 5-p Du. Phaeton 1,445
5200 7-p Town Car 9,000 "Straight 8" 2-p Roadster \$2,650	4060 4-p Runabout \$3,950 4090 5-p Phaeton 3,750 4242 4-p Coupe 4,650	3355 7-p Touring 2,150 3355 7-p Touring 2,195 Sup. Sp. Road-	3710 5-p Brougham 1,750 3875 5-p Sedan 1,895
4-p Roadster 2,900 5-p Touring 2,650 7-p Touring 2,750	(143 in. W. B.)	3486 5-p Coupe Sedan 2,095 3486 5-p Brougham 2,295 3345 4-p Coupe Roadston 2,295	Big Six (120 in. W. B.) 3320 3-p Du. Roadstor 21 407
5-p Sedan 3,180 5-p Sub. Sedan 3,380 7-p Sedan 3,280 7-p Sedan 3,280 3,280	4199 7-p Touring \$3,950 5-p Club Sedan 4,890 4655 7-p Sedan 5,000 4710 7-p Sedan Lim. 5,100	3440 4-p Coupe Roducter 2,320 3603 5-p Sedan 2,495 3640 7-p Sedan 2,595 4-p Sup. Sp. Sedan 5,000	3320 3-p Du. Roadster \$1,495 3425 4-p Sport Roadster 1.645 3505 5-p Sport Phaeton 1.575 3570 5-p Club Coupe 1,650 3760 5-p Sedan 1,895
4-p Coupe 3,180 5-p Coach Broug. 3,180 5-p Town Car 4,600	PAIGE "6-72"	ROAMER "6-50-55"	(127 in. W. B.)
MARMON "74" 4-p Speedster \$3,295 3827 2-p Speedster 3,295	(125 in W. B.) 5-p Std. Sedan \$1,495 5-p Sedan De Luxe 1,670 4-p Cab Roadster 2,295	5-p Spec. Tourer \$1.295 5-p Spec. Sp.Tourer 1,395 2-p Bus. Coupe 1,395 5-p Coupe 1,395 5-p Sedan DeLuxe 1,695	4030 5-p Coupe 2,045 4030 5-p Brougham 4d. 2,095 4080 7-p Sedan 2,145 Berline 2,225
3604 5-p Phaeton 3,295 3704 7-p Touring 3,295	7-p Sedan 1,995 T-p Limousine 2,245	"6-54-E"	STUTZ "A-A"
3983 2-p Std. Coupe 3,295 3937 4-p Victoria 3,295	(115 in. W. B.) 5-p Brougham \$1,295	4-p Tourer 1,985 2,285	4164 2-p Speedster \$2,995 4175 4-p Speedster 2,995
4243 7-p Sedan 3,295 4243 7-p Sedan 3,370 4080 5-p Spec. Broug. 3,395	PEERLESS "6-72"	7-p Tourer 2,285 3-p Cabriolet 2,750 5-p Sedan 2,950	4416 5-p Brougham 2,995 4416 5-p Sedan 2,995 4273 4-p Yield 2,995
4065 5-p Spec. Sedan 3,395 4243 7-p Spec. Sedan 3,470	((126½ in. W. B.) 3175 5-p Touring \$1,895 3425 5-p Coupe	"4-75-E" "Custom Built"	4286 2-p Coupe 2,995 VELIE
4175 7-p Sedan de Luxe 3,850 4100 5-p Sedan Lim. 3,900	3500 5-p Sedan 2,395	2-p Speedster \$3,485 3-p Sport 3,285 4-p Tourer 2,985	3030 4-D Sp Boodet
MOON Sedan Lim. 3,975	(133½ in. W. B.) 3275 2-p Roadster \$2,195	"8-88" (138 in. W. B.)	3025 5-D Club Phaeton 1,495 3005 5-D Brougham 1,425
Series "A" 2600 5-p Roadster \$1,395 2560 5-p Touring 1.195	3700 7-p Sp. Touring 1,995 3700 7-p Sedan 2,595	5-p Sport 2,750 5-p Tourer 2,495	3175 5-p Sedan 1,450 3340 5-p Royal Sedan 1,450
2720 5-p Cab. Roadster 1,595 2710 5-p DeL Brougham 1,395	3575 5-p De Luxe Sedan 2,795 3650 7-p De Luxe Sedan 2,995	2-p Speedster 2,985	WILLS SAINTE CLAIRE
2860 5-p DeL. Sedan 4d. 1,545 London	2800 5-p Phaeton \$1,395	3-p Cabriolet 2,950 5-p Spec Sedan 3,485	"B-68"
3270 5-p Sp. Touring \$1,985 3290 7-p Touring 1,985 3590 5-p Petite Sedan 2,540 NASH	2950 5-p Roadster 1,495 3140 5-p Sedan 1,495 3140 5-p Std. Sedan 1,595 3140 5-p De Luxe Sedan 1,795	7-p Sedan (136 in. 3.285 W. B.) 3.285 Brougham 2.895 "8-80" (126 in. W. B.)	3500 7-p Phaeton \$2,900 3520 5-p Sedan 3,100 3635 7-p Sedan 3,300 "C-68"
"Special" 2870 2-p Roadstor	"8-69" 3675 Roadster \$2,995	2950 2-p Roadster \$1,895 3150 2-p Coupe 1,985 3580 5-p Sedan 1,985	3350 4-p Roadster \$2,900 3450 4-p Gray G. Tray
2960 5-p Touring 1,135 3030 2-p Business Coupe 1,165	3950 5-p Sedan 3,495 4025 7-p Sedan 3,595 4100 7-p Ber, Limousine 3,795	ROLLS-ROYCE	3600 5-p Sedan 3,200 "D-68"
3170 5-p Sedan 2d. 1,215 3170 5-p Sedan 1,315 3270 5-p Sedan 4d 1,445	PIERCE-ARROW	Manufacturers do not quote list prices.	3550 4-p Gray G. Trav. \$3,000 3450 4-p Roadster
"Advanced" (121 in. W. B.)	3245 2-p Runabout \$2,895 3300 4-p Phaeton 3,095	STANLEY 3600 5-p Phaeton \$2.650	3800 5-p Std. Sedan 3,450
3390 4-p Roadster \$1,475 3400 5-p Touring 1,340 3550 5-p Sedan 2d. 1,425	3470 5-p Coach 2d, 3,150 3525 5-p Coach 4d. 3,250 3620 7-p Coach	4000 5-p Sedan 3,400 STAR "4"	3820 5-p Brougham 3,550 3710 5-p Spec. Sedan 3,450 3875 7-p Enc. Limousine 3,650
"Advanced" (127 in. W. B.)	3480 5-p Sedan 3,695 3600 7-p Sedan 3,895	1885 5-p Touring \$540 1915 2-p Coupster	3650 7-p Phaeton \$2,600
3480 7-p Touring \$1,490 3640 4-p Victoria 1,790 3750 5-p Coupe 4d. 1,990	3655 7-p Enc. Dr. Lim. 4,045 3675 7-p Lim. Coach 3,450	2257 5-p Coach 695 2257 5-p Sedan 4d. 795	3550 4-p Gray G. Trav. 2,600 3680 5-p Sedan
3830 7-p Sedan 1,990 OAKLAND	4350 2-n Pro-	Standard "6" 2025 5-p Touring 725 2-4-p Spec, Roadster 910	3765 5-p Vogue Sedan 2,900 3775 7-p Sedan 2,900
2600 4-D Sp Pondster 1.55	4500 4-p Touring 5,250 4590 7-p Touring 5,250	2045 2-p Coupster 745 2100 2-p Coupe 820	"T-6" (127 in. W. B.)
2640 5-p Touring 1,025 2615 3-p Coach 1,095	4730 3-p Coupe 6,800 4800 4-p Sedan 6,900	2245 5-p Coach 880 2345 5-p Landau Sedan 975	3580 4-p Roadster 2,700
2615 3-p Landau Coupe 1,125 2765 5-p Sedan 1,195 2885 5-p Landau Sedan 1,295	4750 4-p Coupe Sedan 6,900 4730 6-p Brougham 6,800	STEARNS-KNIGHT "B-4"	3900 5-p Sedan 3,150 4075 7-p Sedan 3,150
OLDSMOBILE "30"	7-p Limousine 7,000 5060 7-p Enclosed Lim. 7,000 4780 7-p French Lim 7,000	3475 4-p Touring \$1,595 3475 5-p Touring 1,595 3495 2-p Sport Coupe	4080 7-p Limousine 3,350 3920 5-p Brougham 3,750
2235 5-p Touring	4730 6-p Landaulet 7,000 PONTIAC	3650 4-p Coupe 1,795 3725 5-p Sedan 2,995	3810 5-p Spec. Sedan 3,150 WILLYS-KNIGHT
5-p DeL. Touring 980 2-p Coupe 925	2270 2-p Coupe 2335 5-p Coach \$825	75" Brougham 2,095	"66"
2660 2-p De Luxe Coupe 990 De Luxe Coach 1 040	REO "T-6"	3550 3-D Touring 1,875	3395 5-p Touring 1,750 3566 7-p Touring 1,750
2735 5-P De Lura Sodan 1,025	3375 2-p Roadster \$1,665	3875 4-p Coupe 2,185 3775 5-p Sedan 2,475	3582 5-p Coupe Sedan 2,095 3604 4-p Coupe 2,195
1919 "91" 4	3365 2-p Coupe 1,495	3780 5-p Brougham 2,475 "95"	3686 5-p Sedan 2,295 3822 7-p Sedan 2,495
1 ouring \$495	3515 5-p Sedan 4d. 1,565 3565 5-p Spec. Sedan 1.745		2846 5-p Touring \$1,295
May 20, 1926			1,495

Mechanical Specifications of Current Passenger Car Models

	ABREVATIONS— NAMES OF MFRS. OF STOCK PARTS	ent	eck ucts	7	8	Lave—Lavine Make—Merchant & Evans Make—Merchant & Evans Mar—Marvel Mur—Amorie Mur—Amorie N-E-North East Nor-Northway Pet-Peters Ray—Rayfield Roy—Rayfield Roy—Rayfield Sa—Saal Sa—Saal Sa—Saal Sa—Sayleber Sin—Scheder Sin—Sch	Spt—Spilidorf SM—Shilidorf SM—Sterling Str—Stromberg Th—Thermod The—Themer Tillokon Tillokon Tillokon Tillokon Tillokon Tillokon	U.PUniversal Products W.GWarner Gear WarWarner WarWasinghouse WieWesinghouse WieWisconsin ZeZerk Zen-Zenth
	EVIATI S OF OCK 1	A-K—Atwater-Kent A-L—Auto-Lite Ada—Adams t Al—Alemite Alm—Almetal	B&B—Borg & Beck B-L—Brown-Lipe Bal—Ball & Ball Ba—Bassic cups Car—Carter CAS—CAS Products Cle—Cleveland	Continental	awwen Delon etroit betroit burston Dyneto Dyneto Jyneto Jyneto Joodin int int int Clemmer its aton oblinon strifte Leece-Neville	Lyc—Lavine M&E—Merchant & I Mar—Marvel Mec—Merbanics Ma Mar—Muncie Mor—North East Nor—North Way Pet-Peters Ray—Rayfield Ray—Rayfield Ray—Rayfield Ray—Rayfield Ray—Rayfield Sa—Sasi Sa—Sasi Sa—Sasi Sa—Sasi Sa—Sasi Sa—Sasi	vart ing mberg rmoid emer teon iken	iversal arner G mer stingho Villys-N consin ith
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	Type and Make	Pr-Al. A-l Oc-Ju. Ad Pr-Dot Al- Pr-Dot Al-	Pr-Ze. B. B. Br. Pr-Ze. B.	Pr-Ze. Co.	Pr-Ze. De Bowen De Bowen De Bowen De Branch De Ge	0w PP-2c My PP-2c My PP-2c My PP-2c My PP-2c My PP-2c PP-2c	Pr-Da. Sp Pr-Da. Sp Pr-Al. Sr Pr-Ze. Th Pr-Ze Til	Zewww
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	Number of Cyls., Bore and Stroke	6-3x 4 4-35/8x5 4 6-31/4x41/2 4 8-31/4x41/2	1. 6-3/8×43/3 4 8-3/8×443/4 1. 6-3/8×54/4 1. 6-3/8×44/3 1. 6-3/8×44/3 1. 6-3/8×44/3 1. 6-3/8×44/3 1. 6-3/8×44/3	6-31/2x5 F 4-35/8x41/2 6-3x41/4	10 63 7674 4 4 6 8 8 8 3 7 7 7 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Own 6 6-24x44 Con 91 6-24x44 Con 16 6-25x44 Con 16 6-25x44 Con 16 6-25x44 Own 11 6-25x44 Lyc. 48M 6-3x44 Con 48M 6-3x44 Con 16 6-3x44	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Ch—Chain Cl—Cadain CO—Chain; Overhear shaft Cu—Oil and grease cups Cu—Oil and grease cups D—Multiple disk E—Full elliptic F—F—External four wheels E—F — External four wheels F—F — External fransmission F—F — External fransmission F—Filter Filter F
	Make and IsboM	OwnCF Lyc4SM Lyc4HM	Own. Std. Own. Mast. Own. 314 Con6J Con8R Own35	n25F	Own	Own . 66 (Con . 91 (Con . 92 (Con .	755 7	Over d gree d gree disk iptic rnal rnal rnal
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	Tire Size Decimals-Balleons	30x4.7 30x5.2 30x5.2	31x5.25 33x6.75 33x6.75 34x7.30 32x6.20 33x6.00 33x8.00	32x6.2 30x5.2 30x5.2	30x5 31x5 31x5 33x6 33x6 33x5 33x5 32x6 33x5 33x5 33x5 33x5 33x5 33x5 33x5 33	32x6 20 30x4 95 30x5 25 30x6 27 30x6 27 30x6 20 31x6 26 30x6 77 30x6 27 30x6 20 30x6 20 30x7 2	33x6 33x6 33x5 30x5 35x6 33x6	
	Wheel Base (Inches)	108 120 121 129	120–128 132–138 132–138 132 122 124 103	185–1981/2; 156‡ 156‡	162724 10872 10872 120 120 115 116 116 116 116 116 116	132 1100 1100 1114 1114 1114 1114 1114 111	126-137 119 136 124 142 138	LES et ing
	MAKE AND MODEL	Ajax	Buick Standard Buick Master Cadillac 314 Case 14 Chandlec 315 Chandlec 315 Chandlec X	Chrysler. "58" Chrysler. "58" Chrysler. "60"	Chrysler "70" Chereland 43 Chereland 43 Chereland 43 Chereland 43 Damar 6-70 Dayris 93 Davis 92 Elear 6-70 Davis 93 Davis 92 Davis 92 Elear 6-70 Davis 93 Davis 93 Davis 94 Davis 95 Davis 95 Davis 95 Davis 95 Davis 95 Davis 95 Elear 6-75 Elear 6-75 Elear 6-75 Elear 6-75 Elear 6-75	Essex 5-6 First 2-18 First 2-18 First 2-18 First 2-18 Fordin 1.1 Gardner 6B Gray 5 Gray 5 Hwrtz 10-1 Hupmobile 4.4 Hupmobile 8.4 Jewett New Day	n. 75 nile. Jr. 8 nile. 48	KEY TO SYMBOLS -At extra cost -Balloons at extra cost -Overall Length -A-Three-quarter floating A-AT -A luminum B-Semi-steal B-F-Both internal and B-F-Bot

G—Head and side
Gr—Gresse cups
H—Horizontal (valves)
I—I—Integral (valves)
I—T—Integral (valves)
I—T—Torizontal (v Ch—Chain
Cl—Cation
CO—Chain; Overhead shaft
Cu—Oll and grease cups
D—Multiple disk
E—Full elliptic
C—Fahric
E—Full elliptic
E—Full elliptic
E—Full elliptic
E—Full elliptic
E—Full elliptic
E—Full elliptic A-Air B-Aminum B-Seni-sited B-F-Both internal and B-Fr-Both internal and B-Fr-Both discremental and B-Fr-Both discremental and -At extra cost
-Balloons at extra cost
-Overall Length

-Semi-floating

-A-Remi-floating KEY TO SYMBOLS Motor Age



THERE are a few motor car manufacturers who have succeeded in building up a strong dealer body. Of these, Cadillac is an outstanding example.

In the Cadillac distributing organization the refining process of time has done its work. As a result, the Cadillac is sold by one of the finest merchandising organizations in the world.

In this day of keen competition, when so many factors enter into the merchandising of automobiles, the character of the distributing organization is extremely important. The caliber of the Cadillac distributing organization is a sales asset of great benefit to Cadillac, and at the same time it is the best guarantee and protection to the public.

Cadillac dealers are reliable, competent, successful merchants from whom to buy motor cars; they are substantial, dependable vendors of service and supplies—men who have earned and are holding the respect and confidence of their public.

CADILLAC MOTOR CAR COMPANY, DETROIT

C A D L L L A C



Th...Thermo-sypl
V...Cantilever
Var...Varies
X...Sieeve valve

PS—Splash with presse Pm—Pump Q—Quarter elliptic R—Rectifier S—Semi-elliptic

O—Special type (rear springs)
OC—Oil cups
OG—Oil and Grease Cups
Ow—Oil cups with wick feed
Fr—Fressure wun

Int-Integral
Int-Integral
I-F-Internal four wheels
I-F-Internal rear wheels
I-Three-quarter elliptic
K-Cone

ting E—Full elliptic
E-F-External four wheels
E-R-External rear wheels
E-R-External transmission
and F-Fabric
hand shaft FT-Full foreits

A—Three-quarter fic A—Air minum AI—Aluminum B—Semi-steel B—F—Both interna B—F—Both interna

Mechanical Specifications of Current Passenger Car Models-Continued (From page)

(This list comprises cars distributed on a national basis)

| Rear Springs—T
Length Chassis Lubrical Type and Make | Bowen A | | B&B—Borg & Beck
R.I.—Brown-Line | a-Bassic cups
ar-Carter | Cle—Cleveland
 | on—Continen | Cpl—Campbell De Jo—De Jon | Dit—Ditweiler
Do—Dot | Dur-Durston | Eat—Eaton
Fli—Flint | Gdr—Goodrich
Gem—Genner
 | Gi—Gits
Hoo—Hoosier | | Lyc-Lycoming | M&E—Merchant & Evans
Mar—Marvel
Mec—Mechanics Machine | Co.
fun-Monson | N-E-North East Nor-Northway Pet-Peters
 | R-D-Rochester-
Duesenberg | oc-Rockford | Sal— Salisbury
Sch—Schebler | pe—Special Make | al—Splitdorf
 | il—Sterling
r—Stromberg
hr—TJ-ermoid | Til—Tillotson
Tim—Timken | U-M—Universal Machine
U-P—Universal Products | W.G.—Warner Gear
Wag.—Wagner
War.—Warner | Wat—Watford
 | is—Wisconsin E—Zerk | |
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Thousands of Oldsmobile owners first rode in it, drove it, put it to one test after another. They found that attractive as Oldsmobile is in appearance, inviting as is its low price, its greatest excellence lies in performance. That is why you owe it to yourself to learn what these Oldsmobile owners know -base your decision on performance!

SEDAN

We have secured a supply of Francis Birtels' interesting book "Conquering the Australian Bush." If you would like a complimentary copy address Olds Motor Works, Lansing, Mich.



... and increasing thousands buy it every day. Interest in Oldsmobile has grown and grown. Today Oldsmobile's gain is the talk of the trade. And still it grows — and its gains far outstrip the gain of the industry.

This advertisement appears in the Satur-day Evening Post, Literary Digest and many others.

Mechanical Specifications of Current Passenger Car Models—Continued

(This list comprises cars distributed on a national basis)

		n e e
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	Piston Dis- placement	3 92 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
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O.—Oli and Grease Cups
O.—Oli and Special (brakes)
O.—Special (brakes)

G—Head and side
Gr—Grease cups
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H—Horizontal (valves)
He—Helical gear
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Int—Integral
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I—Integral
I—I

CI—Cast fron
CO—Chain; Overhead shaft
Cu—Oil and grease cups
D—Muttiple disk
E—F VIII elliptic
E—F VIII elliptic
E-R — External rear wheels
E-R — External rear wheels
F-R — External transmission
F-First Communication of Communi

PC—Pressure to all crankshaft and connecting rod bearings
PK—Fressure to crankshaft, connecting rods and camshaft, connecting rods and camshaft hearings
PS—Splash with pressure
Q—Quarter elliptic
R—Rectifier libtic
R—Rectifier libtic
R—Rectifier libtic

Sp—Splash (lubrication) Wat—Wagner
Sp—Splash (lubrication) Wat—Warder
Spe—Special make
Sta—Standard
The Thermo-apphon
V—Canliever
X—Sleeve valve
X—Sleeve valve
Z—Thistone on element

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Thousands of Oldsmobile owners first rode in it, drove it, put it to one test after another. They found that attractive as Oldsmobile is in appearance, inviting as is its low price, its greatest excellence lies in performance. That is why you owe it to yourself to learn what these Oldsmobile owners know -base your decision on performance!

SEDAN

We have secured a supply of Francis Birtels' interesting book "Conquering the Australian Bush." If you would like a complimentary copy address Olds Motor Works, Lansing, Mich.

BILE

... and increasing thousands buy it every day. Interest in Oldsmobile has grown and grown. Today Oldsmobile's gain is the talk of the trade. And still it grows - and its gains far outstrip the gain of the industry.

This advertisement appears in the Satur-day Evening Post, Literary Digest and

As dressy as a cleanly polished shoe

As a cleanly polished shoe adds to a man's appearance, Budd-Michelin Wheels add to a motor car's.

They are finished like the rest of the car—with a more enduring finish than wood will take. Their smooth convex surfaces repel dirt.

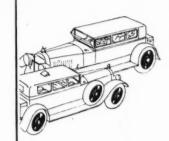
There are no joints or crevices to gather mud and dust—just clean the surface and you clean all!

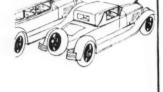
Budd-Michelin Wheels are the final step in the all-steel automobile—the safe automobile.



WHEEL COMPANY

Detroit



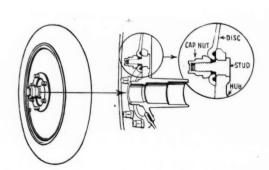


Why BUDD-MICHELIN WHEELS are seen but not heard

... There can be no noise between disc and rim because they are permanently joined practically one piece.

... The hub cannot cause noises because it is a one-piece forging.

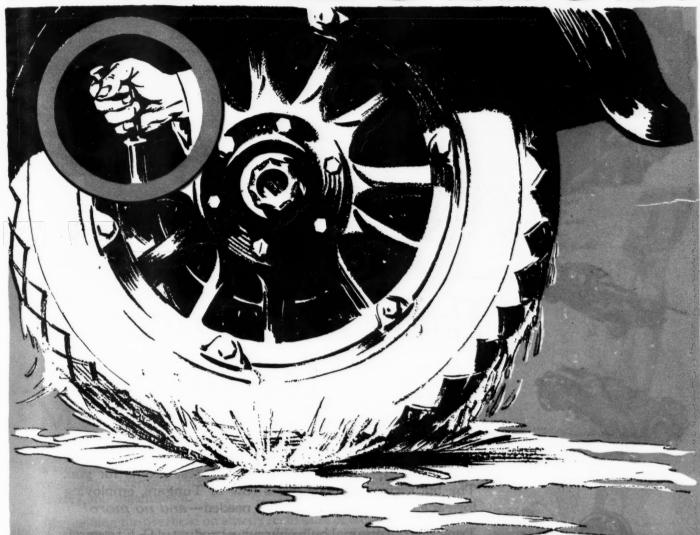
... The diagram shows how the mounting of the disc on the hub prevents any play or noise. The disc does not touch the studs—the cap nuts carry it.



Tightening the cap nuts brings disc and hub together with a tension like the compressing of a spring. Prevents any chance of noise here.

... The holes in the disc cannot be worn egg shape by the studs. The studs cannot be sheared off by the disc. The cap nuts cannot work loose because they are in effect self-locking.

PROTECTION

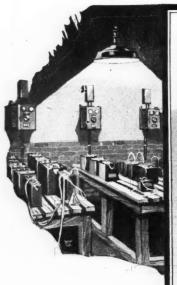


WHEN YOU NEED IT

MOST Certain and uniform action wet or dry — this prevents skidding! or dry — this prevents skidding!

WORLD BESTOS

World Bestos Corporation, 52 Courtland Street, Paterson, N. J.









There is a Tungar for your job



The Tungar upholds the world-wide fame of General Electric for quality and achievement.

Write for the booklet that shows the profit possibilities of the Tungar.

Merchandise Department General Electric Company Bridgeport, Connecticut Whether you have four batteries to charge a day—or a hundred—whether they are auto batteries or radio "A" or "B" batteries—the Tungar means biggest profits for you. The big service stations use a row of Tungars, employing for each day's work the current needed—and no more!

Tungar is the original bulb charger, a product of G-E research and manufacture. It is safe for overnight operation. It will work without attention long after your day is done. It means 24 profit hours a day.



Tungar—a registered trademark—is found only on the genuine. Look for it on the name plate.

GENERAL ELECTRIC

926



FRANK A. SCHOLES, RICHMOND, CAL.

Stewart-Warner Products

An Important Campaign for Better

Shock Absorbers Bumpers
Rear Fender Guards
Spotlights
Electric Horns Electric Windshield Cleaners Rear Vision Mirrors

Speedometers Heaters Vacuum Tanks - AND -Matched-Unit Radio

ERCHANDISING accessories to us is like that of merchandising automobiles, and that is to say, it is the volume that counts in the long run with as rapid a turnover as possible. Discount, which we all consider is a factor which enters into it, is sometimes a secondary consideration, especially when you are merchandising a nationally advertised product backed by a good, strong, substantial factory and organization.

Maintaining the overhead on strictly retail sales of automobiles during dull periods of the year, is a hard problem, and, in order to keep our business in a healthy condition, we aim to go after everything we can get, and we consider selling accessories the "cream of our business."

Stewart-Warner Products have been handled by us for years, and we consider them very desirable. Our association has been very congenial, their product very satisfactory, and by this we have a growing list of satisfied customers, and that is what really counts in the long run for real profits." (From letter by Frank A. Scholes, Richmond, Cal.)

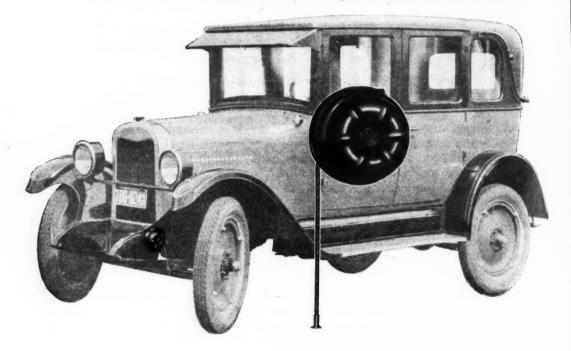
STEWART-WARNER SPEEDOMETER CORPORATION



TWELVE MILLION PEOPLE ARE TODAY USING STEWART-WARNER PRODUCTS



for CHEVROLET



A SPECIAL SET OF FOUR

BURD SHOCK ABSORBERS \$2250 AT RETAIL

Write or Wire-Today!-BURD HIGH COMPRESSION RING CO., Rockford, Illinois

1926





Gives the Autoist Double Protection Against Theft

By securely locking the ignition and automatically sounding the horn if the car is tampered with.

Type A \$5.00

> Chevrolet 1921-24 Essex 1923-26 Ford

Type B \$7.00

Auburn Buick Cherrolet 1924-26 Chrysler Dodge Essex 1921-23 Hudson Nash Etc.

Saves the Battery From Running Down

If thru carelessness the ignition switch is left on when the driver leaves the car the horn blows when the key is turned, giving a warning to turn off the switch to save the battery.

Car Dealers should take advantage of this real profit getter and install the LIKUM LOCK on every car, new or old, which leaves their service station.

Installation is simple and inexpensive on every make of car.

Sold through the established jobbing and wholesale trade.

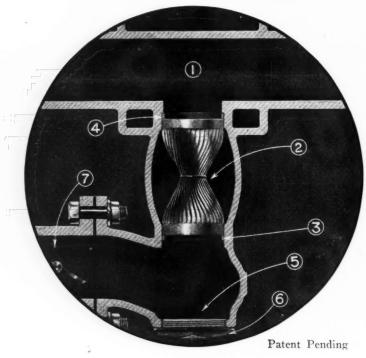
Manufactured by

Loomis-Knight-Miller, Inc., Springfield, Massachusetts

Export Department-Jordan B. Parsons and Associates, Woolworth Bldg., New York City



The "BAT" Super-Charger Is a Hit



- 1. Intake Manifold.
- 2. Bat Hydro-carbon mixer.
- 3. Lower lock ring.
- 4. Upper lock ring.
- 5. Catch basin for trapping raw fuel.
- 6. Plug.
- 7. Carburetor outlet.

Prices Range as Low as

\$7.50

Starting at the beginning, with a new product that goes, is what makes money for dealers. A clear, easy sales opportunity—without competition—makes money fast.

Here you have it in the "Bat" Super-Charger, for passenger cars, trucks, tractors, marine engines, aviation engines, stationary engines, etc. It is the sensation of 1926 automotive inventions—and there is nothing else like it.

The "Bat" System of Super-Charging does for ordinary engines, what the super-charger did for racers at Indianapolis last year.

It makes cold motors start; it prevents dilution; it eliminates back-fire; it distributes power evenly to all cylinders by delivering the same quality of gas to all; it operates successfully on new cars and rejuvenates old ones. Simply installed in a few minutes—and the price is right.

A Wonderful Opportunity for Dealers-Write

P. H. WEBBER COMPANY

Racine Industrial Plant Building No. 12

Racine



Wisconsin

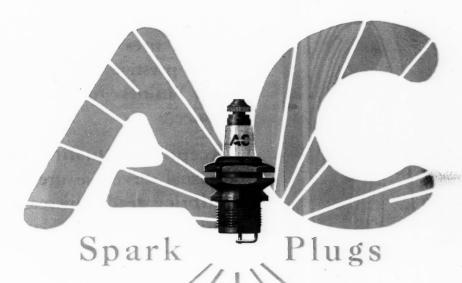
Manufactured and sold under license of P. J. F. Battenburg, Racine, Wisconsin

NEW LOW PRICES

that mean

NEW SALES OPPORTUNITIES

on



Powerful advertising, headed by The Saturday Evening Post issue of July 10th, will announce to the world important reductions in the retail prices of AC Spark Plugs, as follows:

AC Spark Plugs...old price \$1...new price 75c AC 1075 (for Fords). old price 75c...new price 50c

This means new and increased spark plug business for AC dealers who are ready and prepared to cash in on it

Both automobile manufacturer and owner are seeking one thing —reliable and economical operation.

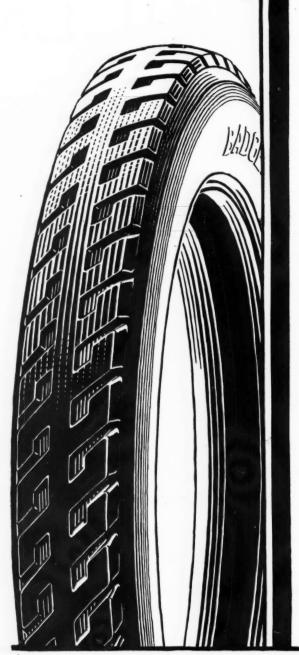
That's why 148 manufacturers use and millions of owners insist upon AC products.

AC-SPHINX Birmingham ENGLAND

sin

AC Spark Plug Company, FLINT, Michigan

AC-OLEO Levallois-Perret FRANCE



Prestige for You—Mr. Tire Dealer

WHEREVER Badger tires are sold, they build prestige and permanent business for the Tire Dealer.

Exceptional quality and unusual service assure this, and bring steadily increasing business from every class of service.

Dealers supplied through leading Jobbers everywhere.

The Badger Rubber Works

Milwaukee, Wisconsin



AMER SETS



SET NO. 38 NET PRICE \$30



Tere are reamers absolutely new and different!

SETNO. 25 COMPLETE \$20 They work with amazing ease and smoothness.

Each set includes 45° Roughing Reamer for removing hard carbon deposits, 45° Finishing Reamer, 15° and 75° Nicked Tooth Reamers for narrowing valve seats, pilot stems [including oversizes for worn guide holes] and T handle.

No. 38 Set handles 90% of all motors. No. 25 Set for all Fords and Fordsons, Chevrolet, Durant, Essex 6, Oakland, Oldsmobile "30" and Velie.

Your Jobber Sells Them ALBERTSON & CO.

SIOUX CITY, IOWA



An old saw that still cuts

Much fun has been poked at the old saw that "my line of business is peculiar." But she still seems to cut.

Of course your line of business is peculiar. It must be. It is obvious that there is no line that has not problems all its own—and plenty of them.

Recognizing a problem as a problem is the first step in solving it. Getting all the facts and getting them clearly in mind is the next. In both of these your A. B. P. papers can be of great value if you will but make use of them.

They will do more than report situations and last-minute developments. They will do more than supply accurate facts. They will, through their editors, present the viewpoint of men seasoned by long experience in the trade, men able to offer constructive suggestions and constructive criticisms.

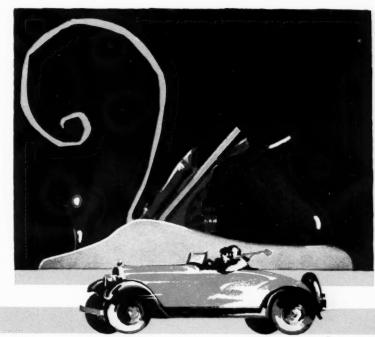
The advertising pages of an A. B. P. member paper are well worth close and constant study. They, too, are full of suggestions for economy. And publishers of member papers of the A. B. P. are living up to their pledge "to decline any advertisement which has a tendency to mislead or which does not conform to business integrity."

THE ASSOCIATED BUSINESS PAPERS, Inc. Executive Offices: 220 West 42nd St., New York, N.Y.

A.B.P

An association of none but qualified publications reaching 54 fields of trade and industry.

smant.h



BOSCH

The Bosch Shock Absorber is designed and built for the modern day car. Instantaneous in action and with a wide range of operation to meet varying road conditions, Bosch Shock Absorbers literally smooth the road-plane off the bumps. They sell easily wherever featured. Bosch Shock Absorber national advertising has developed a large market for you to cash-in on. Only two types are needed to fit all cars-emphasizing minimum stock and investment for you. Adjustable to balloon or regular tires. Stock and sell Bosch Shock Absorbers for greater profits.

For Fords (3-point Control Set) Complete \$16.50 per set Medium Cars \$15 per pair Heavy Cars \$20 per pair

AMERICAN BOSCH MAGNETO CORP.

Main Office and Works:

Branches: New York Chicago Detroit San Francisco

SHOCK ABSORBER



Shock Absorber



SERVICE REPRESENTATIVES FOR AUTOMOTIVE EQUIPMENT MANUFACTURERS

United Auto Electric Co., Inc.

600 BERGEN AVENUE

Jan. 29th, 1926

American Bosch Magneto Corp. (17 West 60th St., New York City.

It has been very surprising to us what wonderful success we have met with in selling your line of accessory products were since we decided to take on these items in addition our regular automobile electrical business.

Your shock absorber, particularly, has proved to be a ready "seller" and a very profitable sales item.

We have now been pushing the sale of Bosch Shock Absorbers for close to eight months and our net profits in this item alone have been larger than we ever expected was possible.

The shock absorber itself is standing up exceptionally well and so far we have had no occasion to do any appreciable amount of repairs or service on it.

We want to thank you for your consistant cooperation and look forward to an even bigger year in 1926.

Yours very truly, United Auto Elec. Co. Inc.



AGENCY

MASSILLON, OHIO

Pebruary 6, 1926

American Bosch Magneto Corp., 89 Hancock Ave. West, Detroit, Mich.

BUICK

Our observation of BOSCE SHOCK ABSORBERS in exhaustive tests during the past few months has proven their worth and we are greatly pleased with the results.

Your device meets the requirements of the majority of automobile owners, as it is moderately priced, also can be used on all makes of cars and is especially effective on cars equipped with balloon tires.

We freely recommend BOSCH SHOCK ABSORBERS to car owners, believing they will be well satisfied with their investment.

Que

FROM car owners, car dealers, accessory dealers—wherever they are used or sold, the same enthusiastic story is told of the Bosch Shock Absorbers. Bosch Shock Absorber dealers are making money and building a satisfactory customer trade with every installation. The Bosch Shock Absorber is a real shock absorber in its day in and day out performance. Its control is complete and its smooth action is over a wide range. Simple to install, easy to adjust, but two types are needed for all cars. The investment is low and the turnover is rapid. The profit is substantial. Your accessory wholesaler or the Bosch Branch has Shock Absorbers in stock ready to start you on the way to new profits.

AMERICAN BOSCH MAGNETO CORPORATION

Main Office and Works:

BRANCHES:

New York

Chicago

Springfield, Massachusetts

San Francisco

a BOSCH Salesman

INTERVILLA GARAGE

Buick Sales and Service

INTERVILLA, PA.

June 8, 1925

Just a word or two to inform you how well pleased am with the Boach Shook Absorber. Among the different ypes of Shook Absorbers I have used, the Soach Shook Absorber has proved the most satisfactory.

They are simple to install and give the car owner no trouble thereafter.

I find they are best for balloon tires and in price, quality and performance, the Bosch Unit is hard to best.

Cali a. Yol



State of Botton

The Bourd of Parole

Das Maines

September 9, 1926

Mr. Clyde Bedberg, Esq., Supt. Bernard-Turner Nachine Shop Des Moines, Iowa

Dear Lr. Hedberg:-

I have used two other popular makes and find that the Boach is far superior to any of them. They smooth out ruts, and the biggest advantage over the others is the easy way that the user has of making his own adjustments.

I drive an average of about 1000 miles a week and this gives me a chance to test them. I recently cade a 2800 mile trip in six days actual driving time and the Bosch Shock absorbers performed wonderfully all the way.

One other great advantage that they have over others is the way they hold the rebound of the car. I had a lot of trouble with breaking straps on the other makes but I never had a broken strap with the Soach and I have given them severe tests in the last twelve thousand niles.

With best wishes, I am

al Stader

Parole Officer, Des Moines, Jowa



A. N. KLINE



Service Station:

Sept. 4, 1925

To say we are pleased with the Sales and per-

formance of the Bosch Shock Absorber is putting it mildly.

We are astonished at the rate our sales are multiplying, this is because every car owner has found satisfaction in the Boach Unit and they do not hesitate to tell their

The Bosch Shock Absorber has proved to be a necessity. not an accessory, to car owners: And because of their price, quality and performance, can say that we are well satisfied

a. N. Klives

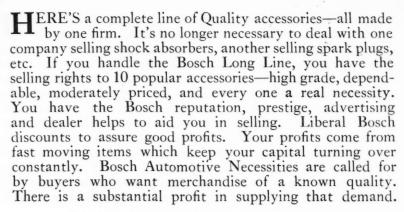




Profit Makers

The BOSCH LONG LINE of Automotive Necessities







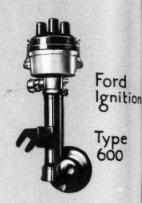
You can profit still more by becoming an Official Bosch Dealer. The requirements are simple—the benefits many. Some of the advantages you would get are: Special discounts on all Bosch material. Greater profits through increased sales. Personal assistance from Bosch salesmen. New markets—added prestige locally. Reference books, sales literature, etc. Sales promotion and advertising service.

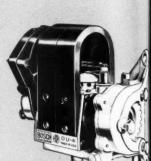
For full particulars, fill out coupon and mail TODAY.



17-23 W. 60th St., New York 3737 Michigan Ave., Chicago Branches

89-95 Hancock Ave. W., Detroit 1262 Post Street, San Francisco





Ford Ignition

Magneto Fitting



Shock Absorber

oark Plug



Ignition Coil



or

Electric Horn
Straight Model
and
Curved Model

Ship me the following units at quantity discount C.O.D.—





Fordson Governo

Mail this Coupon TODAY

MERICAN BUSCH MA	JNETO CORPORATION
nd me full particulars abou	t:
☐ Complete line	☐ Ford Ignition Systems
☐ Shock Absorber	☐ Fordson Ignition System
☐ Windshield Wiper	☐ Fordson Throttle Govern
7 C 1 DI	- D 1 D 1:

Electric Horn	☐ Bosch Dealer Proposition
N	

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ate		Signature	•••••		•••••	



The JUNIOR AMBOTONE

BOSCH RADIO

Bosch Radio productions taneous success all of the country. The Bosch receiver and the Bosch restained the Bosch restained the Bosch restained the Bosch restained for quality. So

GATES HOSE

"The Standardized Radiator Hose"



4½ miles of Gates Vulco Hose is now being packed and shipped every day. Good evidence that quality is what builds a business.

Made by the World's Largest Manufacturers of Fan Belts.

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neto

ordson

S CH D 10 adio produce t with insusuccess all or

ucer have ne Bosch re quality.



No.

125 BENCH LATHE

PRICE \$40 Complete as illustrated

"One of the most useful tools you can have in a repair shop"

THAT is the opinion of mechanics who have seen and used this Goodell-Pratt Bench Lathe. Although comparatively small in size, this lathe can do all sorts of turning and boring jobs. It is a mighty useful tool that every repair shop should have. Length over all, 25 inches; height, $11\frac{1}{2}$ inches; swing, 7 inches; extreme distance between centers, 12 inches. Weighs only 30 pounds.

Well-made and finished with black and red enamel. The bed is milled. All working parts handsomely polished. Live spindle has a cone bearing to take up wear. Tail stock has screw and lever feed. Cone pulley has three steps—1½, 2½, 3½ inches in diameter. Price \$40.

A complete line of attachments are available to fit this lathe, such as slide rest, lathe tools, compression check and collets, milling attachments, turret attachments, etc.

Bench Lathe No. 494

Same construction as No. 125 above, but slightly larger. Length over all, 31 inches. Height, $11\frac{1}{2}$ inches. Swing, 7 inches. Extreme distance between centers, 18 inches. Weight 36 pounds. Price \$44.

400-Page Book of Tools FREE

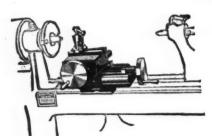
A postcard will bring you a pocket-size catalog of all the Goodell-Pratt Good Tools. This catalog illustrates and describes many tools you will want to outfit your workshop completely. Every tool shown is beautifully finished and made by skilled toolmakers.

> GOODELL-PRATT COMPANY Greenfield, Mass., U. S. A.

Toolsmiths Makers of Mr. Punch

GOODELL-PRATT

1500 GOOD TOOLS

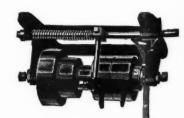


No. 130 Counter Shaft

PRICE \$1200

No. 132 Slide Rest

PRICE \$1750



Rickenbacker A · CAR · WORTHY · OF · ITS · NAME

Rickenbacker Is Invincible

When Cannon Ball Baker ... after waiting nearly a year ... for some other driver in some other car ... to equal his Detroit-Chicago Rickenbacker road record ... then went out and beat it himself ... by more than half an hour ... he proved again that, in all the world, there is no other car of such power, speed and stamina.

In a Rickenbacker Vertical-8 this driver covered the 270.5 miles in 4 hours, 53 minutes flat. This was done after midnight—so as to imperil no others on the road.

There are many sharp right-angle turns—numerous viaducts abruptly crossing railroads—many grade crossings also.

Baker believes that no other driver in any other car can equal this record.

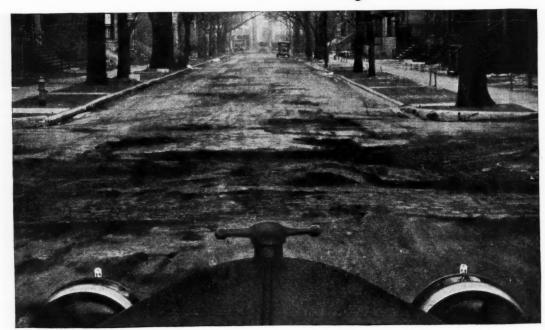
He says if any does . . . then he will go out and beat that again with his Rickenbacker Eight.

It's a satisfaction to be able to offer such a car to one's clientele.

RICKENBACKER MOTOR COMPANY

DETROIT, MICHIGAN

As it really is





As it feels with



WEED Levelizers

"They level the road as you go"



WEED Levelize rs

Easily attached to any car

Once on, there's no further service necessary. No oiling or adjusting. No straps to fray, rot or stretch. After WEED Levelizers are installed, your customers can forget them.

They will be more than satisfied with the way Levelizers smooth out the bumps. An important point to remember is that they do not cause stiff or jerky riding over good roads.

These are the reasons that they stay sold.

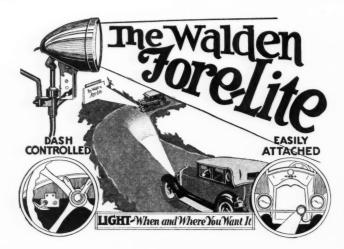
WEED Levelizers are being extensively advertised to make sales easy for you. They will "turn-over" fast, and you will realize a big profit with Levelizers. See your jobber's salesman, or write us

AMERICAN CHAIN COMPANY, Inc.

BRIDGEPORT, CONNECTICUT
IN CANADA: Dominion Chain Co., Limited, Niagara Falls, Ontario
DISTRICT SALES OFFICES:

Boston Chicago New York Philadelphia Pittsburgh San Francisco World's Largest Manufacturers of Welded and Weldless Chains for All Purposes





Walden Fore-Lites Are Selling Each Other

The best salesmen for Walden Fore-Lites are Walden Fore-Lites. Since the beginning of the Spring driving season dealers are having trouble keeping up their stocks.

In two-car families there are nearly always two Walden Fore-Lites. When one appears at a country club, or elsewhere where car owners assemble, in a few days there are a dozen—and sales continue to grow.

The Only Light of Its Kind on the Market

Car owners who want Walden Fore-Lites must buy Walden Fore-Lites. They are the only light of the kind on the market, and patents protect their lasting quality features. The rays of the Walden Fore-Lite can be directed in any desired direction—up and down or to the sides. Controlled from the instrument board, they do the work spotlights were designed for, and act as a rigid driving light when needed as well.

Dealers Make Money

The price of the Walden Fore-Lite is \$18.50. It is a price owners are willing to pay—and it leaves a margin of profit for dealers that makes Walden sales worth while.

Drop us a line and let us give you complete information. Handled in Chicago through dealers direct. Outside of Chicago, exclusive distributors.

THE WALDEN COMPANY

2017 S. Michigan Ave.

Chicago, Ill.



Walden-Worcester

in Interchangeable Socket Wrenches

—For those who prefer this type

SET NO. 28 is a fine example of a REAL set of socket wrenches for REAL work by mechanics. So complete in its sockets, handles, swivels, etc., that it can service ALL cars. Ideal for the independent garage. Contains

Long Shank Speed Wrench, 20" over all, 91/4" shank with solid steel grips.

Short Shank Speed Wrench, 141/4" over all, 41/4" shank with two solid steel grips.

Long Shank Tee Handle, 12" shank, with 12" sliding cross bar.

Short Shank Tee Handle, 6" shank, with 8" sliding cross bar.

Back Spin Reversible Ratchet, 23/4" long, 1" diameter. 10" Combination Tee and Offset.

Plug Connector, 9" Extension Bar, Socket Connector, Offset Handle, Universal Joint.

10 CHROME NICKEL Sockets (Hexagonal)—7/16, ½.
9/16, 19/32, 5%, 11/16, ¾, 25/32, 13/16, 7/8.

Steel Box, size 14½"x6¾"x2¾". Weight, 20 lbs. 8 ozs.

Same quality as used for assembly in 90% of the car factories. As all parts are interchangeable, you can add to or replace any part at any time.

Order through any of our Jobbers. Catalog direct from us. Walden-Worcester, Inc., Worcester, Mass.

WALDEN - WORCESTER
The original and largest exclusive manufactures of All Steel. Socket Whenchoi. - in the World



PUTS THE BRIGHT SPOT IN THE RIGHT SPOT—

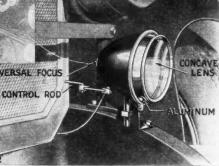
T HE motorist has absolute control over road illumination at all times when night-driving with the Farwell Safety Road Light. By touching a control handle, handily positioned on the steering column, he can direct the powerful beam of the Farwell, to right or left, up or down, at any angle desired. Curves, bridges, obstructions, ditches, are made visible far ahead. House numbers or sign posts are easily picked up and read. This beautiful light is securely mounted down in front where it gives maximum efficiency without glare offense to approaching cars. Will not rust, rattle, or worn loose. All moving parts in the lamp are held in smooth, frictional contact by a strong spring, moves easily but stays where put.

PUSH OR PULL SWINGS LIGHT SIDEWISE
THEN RAISES OR LOWERS LIGHT
SWITCH
CONTROL ROD
No.1

An Easy Installation

No special tools needed to install a Farwell. The car is not defaced or mutilated.

\$12<u>50</u>



SPECIAL OFFER

THE FARWELL MFG. CO.

1702 SUMMIT ST., TOLEDO, OHIO

We are making an unusually attractive special offer to jobbers and car distributors by which they can prove the selling qualities of this light without investment or risk. Write today for this offer.

Let the Time Clock Pay for this Valve Refacer It's your employees' time that tells how much profit you can make in value refacing. The more you cut down the labor on each job, the more



That's why garage owners all over the country report unusual profits from operating a Crowe Cup Wheel Valve Refacer. In 30 seconds it does the work that ordinarily requires an hour. And it increases the efficiency of every valve regrinding job 100%! Also, its installation cost is just about half what you'd expect to pay for this simply constructed, long lasting machine. It has fewer parts subject to wear than any other machine on the market.

Now successfully used for more than three years in earning bigger profits for up-to-date garages. Let us send you a machine for 10-day trial in your own shop. If you are not fully pleased, machine may be returned and your money refunded. Easy payment plan enables you to purchase with money earned through increased profits. Write, today, for full particulars.

Lisle Manufacturing Company

Box C Clarinda, Iowa



Offers Quick Turn-Over

Everyone knows that the oftener your stock turns over, the more money you will make in the course of a specified time.

That is one of the reasons why so many dealers see to it that they are well supplied with YAVAPAI Onyx Gear Shift Lever Balls in the summer time.

It is the season when you can depend on rapid turn-over, and profits.

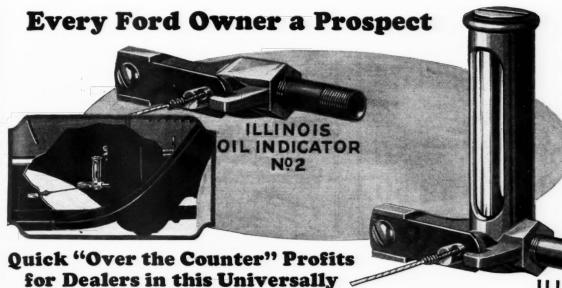
Ask your jobber, or write us direct giving his name.

Yavapai Onyx Mining Corp.

Automotive Division

Dubuque, Iowa

U. S. A.



This is no new toy of doubtful value, but a practical, tested and proven oil level tester for Fords which eliminates the dirty, oily mess of crawling under to turn the pet cocks.

Demanded Ford Necessity

Sure Sale to Every Ford Owner In Your Territory

Every Ford owner will want an Illinois No. 2 Oil Indicator at 75c or an Illinois No. 3 Oil Gauge at \$1.25. Anyone can install them in a few moments without any special tools, giving you a clean, clear merchandise profit without any complications.

We help you sell by furnishing a self-demonstrating counter display card, so simple in design that it even saves you the necessity of explaining to your prospects.

Free Descriptive Folders With Your Order

We also supply a quantity of attractive illustrated folders describing the two types of oil level testers, with dealers' order.

Get in line today to enjoy your share of these profits—send your order through your jobber, or mail direct to us. Mail the coupon for further information.

Ford Dealers Especially

Will profit through handling this new Ford necessity. Every customer means an extra sale and an extra profit. You do them a real service by selling them an Illinois Oil Level Tester. It helps prolong the life of their car and saves them time, money, trouble and inconvenience.

ILLINOIS OIL GAUGE Nº3

BRASS MFG. CO.

Chicago, Ill.

Please send me full in-

Please send me full information on Illinois Oil Level Testers.

ALVORD - POLK

Address....

Never Before a Jack Like This

SO NASTER SO LO BALLO BA



Is Selling like hot cakes wherever it is shown.

C AR owners are beginning to realize that it is the only fully efficient BALLOON TIRE JACK. Goes down to 43/4 inches and up to 151/2 inches. All steel construction. 36 in. folding handle.

BUILT ON A NEW AND POWERFUL LIFTING PRINCIPLE

INVESTIGATE AT ONCE!

SO-LO JACK CO., INC.

Attleboro

er

Massachusetts

Sales Office: 108 Massachusetts Ave., Boston, Mass. Export Agents: American Steel Export Co., Woolworth Bldg., N. Y.

An Easier Way of finding the right reamer

for each job.

This new ready reference wall chart eliminates all need of guessing about fractional sizes and instantly shows you the right reamer for each job. Lists cars by

Lists cars by make, model and year against each job AND THAT REAMER'S SERIAL NUMBER.

New 64-page catalog lists reamers and serial numbers but includes all other tools made by this twenty-year old manufacturer of quality reamers, drills taps and dies. You need one or the other of these free time savers. Serial

numbering system makes ordering easier, too.

Write for either copy you need and names of nearest jobber in your territory equipped to give serial-numbering delivery service.

ALVORD-POLK TOOL CO



ALVORD - POLK

Tools for Repair Shops



Junior Cap

Junior Signal

Senior Cap

Senior Signal

FAITH MFG. CO., Inc. 2533-39 N. Ashland Ave., Chicago, Ill.

He will supply you.

Write for Attractive Discounts

Always Insist Upon Genuine Apex Innerings

Most good Jobbers stock them If it isn't an Apex—It isn't an Innering

THOMSON MFG. CO.
Dept. C Peoria, III.

Tests Compression Locates all knocks, leaky valves and rings

Locates Piston Slaps Eliminates guesswork SELLS MORE JOBS



NEW TIME STAMP **FOLLETT'S**



accounts for every labor minute

Prints the year, month, day, hour, minute, A.M. or P.M. at the exact moment the plunger is pressed—like this, for example:

NOV 19 1920 4 31 PM

Tells when a job is started—and when it is finished. There can be no dispute over the time charge.

Absolutely automatic - except for winding. Every machine guaranteed.

Learn the interesting details from our descriptive data. Follett Time Recording Co., 217 High Street, Newark, N. J. "Established Since 1904"



FULLBACKS look good on every sort of car - \$14 to \$25

The dealer receives New Era bumpers carefully wrapped, securely cartoned and-ready. Saves him a lot of time!

NEW ERA SPRING & SPECIALTY CO., GRAND RAPIDS, MICH.

ELIMINATES SLOW LEAKS

—from rusted clincher rims. An endless piece of specially compounded rubber. Snaps on rim like rubber band. Fits snug all around. Prevents tube touching rusted rim. One size fits all clincher rims. Write for discounts.

LAENG MFG. CO. CLEVELAND, OHIO

Clincher Rim Flap



ORIGINAL BOSCH units bear the full name, Robert name, Robert Bosch, and the trade mark shown at left. These are the iden-tifications of Bosch qual-

Johns-Manville

ASBESTOS BRAKE LINING



HAMMETT MFG. CO., Kansas City, Mo.





GASOLINE

A gasoline gauge on the Dash. Note our half page advertisement in the Saturday Evening Post, June 12th. Write for description and proposition to the trade.

KING-SEELEY CORPORATION Chicago Branch, 2450 Michigan Boulevard



More **Power** Fuel

Zenith - Detroit Corporation, Detroit, Mich.



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HUFFMAN MOTOR TRUCKS

"The World's Most Economical Haulage Equipment"

Widely known for abundant power, durability, dependability, accessibility and standard and nationally advertised units. Prompt deliveries are made from stock on floor. Demonstrations

Dealer Contracts operative by July 1st. Get in touch with the Chicago office for full particulars now.

Valley Motor Truck Company

Manufacturers of Huffman Trucks

2108-10 S. Wabash Ave.

Factory at Elkhart, Indiana

The Step Plate That Is Different!

Dealers are selling them because they really improve a car. Raco plates are made of number one virgin metal. Positively no scrap or remelt metal used. Beautifully polished. Material and workmanship fully guaranteed. Write your jobber today for price lists and discounts. Many styles and sizes.

Reynolds Aluminum Co. Dept. B-3

New Washington, O.



High quality black rubber and nickeled screws or stove bolts furnished with each plate.

RACO Cast Aluminum Plates



10 DAY Trial Offer

Send us your request on your stationery for one G. B. Impeller as sample. Try it for 10 days. If it is not all we claim return it to us at our expense. If you decide to keep it we will bill you for it less regular dealers discount.

FAN FOR FORDS

Guaranteed to prevent overheating

Cools the engine far better than the regular fan combined with a water pump.

No additional power required to drive it. No extra stress on the fan belt.

No trouble to install, simply remove the four screws that

No trouble to install, simply remove the four screws that hold the Ford fan and put on the G. B. Impeller. Less than 5 minutes will do it. Eliminates waterpump troubles, as pump is unnecessary. Has 24 blades. Has nothing to get out of order—one single steel stamping. Develops high Static Pressure necessary to draw the air through the radiator and rush it out of the hood. The regular fan does not furnish any Static Pressure. G. B. Impeller is designed with complete understanding of all contions met in the cooling of an automobile radiator. Retails at \$3.00. Long discounts to you. Write today.

G. B. IMPELLER

De Bothezat Impeller Co., Inc.

1922 Park Avenue

New York City



Send your blueprints and we will forward you in short order quotations on your requirements for Angular Contact Thrust Bearings, Angular Contact Radial Bearings, and Thrust Ball Bearings of all types.

Inquiries are always appreciated.

THE WOODS ENGINEERING CO., Alliance, Ohio General Sales Representatives for Canada, carrying branch

warehouse stock:
Colonial Traders, Ltd., Chatham, Ontario, Canada.

THE BEARINGS COMPANY OF AMERICA Western Sales Office, 1012 Ford Bldg., Detroit, Mich. LANCASTER, PENNA. MORRISON **Automatic Double Range** Worm Drive **JACKS** Can't Slip or Tilt Flexible steel "Sure Hold" cap prevents dangerous slipping. Long folding handle (36 to 72 in.) operates from standing position. Gets under overhanging bodies. Easy to work. Few turns and it's up. Built in 11 sizes for all service requirements up to 8 tons. Furnished as standard equipment on fine passenger cars, trucks, buses and Fire Apparatus for past 4 years. The Jack for YOUR shop. Write for sample for test.

you were in a position to sell a REAL STOVE for 50c—a two burner camp stove which is very substantial and suitable for all forms of outdoor cooking while touring, etc., and yet folds so flat it fits in tool box or side pocket of a car. And if the stove were packed in an attractive self-seller display box for counter and window-we ask you-

"How Many Hundred Would You Sell?"



Dept. 513 East 37th Street New York City

CANNED

IS THE CLEAN, CONVENIENT, SOLID FUEL BURNED IN THIS STOVE Sterno is manufactured under U. S. Govt. Permit for use only as a Fuel

BOLTS BLUE PRINT BUSHINGS

"Made to Blue Print"

guarantees to the Replacement Trade the same high standard of Quality and Accuracy de-manded by the car manufacturer.

The Fostoria Screw Co., Fostoria, Ohio

Tapered ROLLER BEARINGS



SPEE-DEE CLEANS UP for Dealers

Results in quick stock turn-over, with small invest-ment and liberal profits. Without water it removes grease, stains, etc., from hands, clothes, unholster, paint or enamel. Indispensable in shops, service sta-tions and car kits. List 35c. Write for discount details.

States Chemical Company
703 W. Fulton St. Chicago, III.



Let us profitboosting plan. It's Free.



Has two primary windings instead of one. Gives a hotter spark, makes easier starting, gives more power, quicker pickup and more mileage. Try it on a sluggish motor. Write for full particulars,

The Mallory Electric Corporation, Toledo, Ohio.



"There's a Victor Lamp for every Automotive Need"

THE CINCHINATI VICTOR COMPANY

772 - 720 Reading Road, CINCINNATI. OHIO



They Won't Come Back

Those jobs won't come back showing oil passing, compression loss and crank-case dilution if you use a Hall Hone. The Hall makes cylinders both round and parallel. Ask your jobber.

THE HALL MFG. COMPANY 505 Hall Bldg., 1600-06 Woodland Ave. Toledo, Ohio



The Book "AIR PROFITS"

BRUNNER MFG. CO.



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Absolutely Stop Skid

Protex Chain Co., Inc. Waynesboro, Pa.

Many small horseshoes grip the road and prevent slip. The first scientific anti-skid device.



Write for Special Book Garage Front THE KAWNEER CO., 3624 Front St., Niles, Mich.



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Automobile and Radio Batteries Write for our interesting dealer proposition. It means bigger profits for you.

The Prest-O-Lite Co., Inc., Indianapolis, Ind.

REBORER AND GRINDER

big money-maker in any automobile repair shop or garage.
monstration in your own shop.
Simplicity Manufacturing Company

Port Washington,



QUALITY—PROFIT—TURNOVER

American *lflammered* Piston Rings

American Hammered Piston Ring Company Baltimore, Maryland



FREDERICKS Rewinding Service

New Rewind Profits—See announcement every 4th week. Write now for price list. The H. M. Fredericks Co., Lock Haven, Pa.

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—is the time to read next week's issue of MOTOR AGE, as you are reading this week's issue this week.

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5 So. Wabash Ave.

Chicago, Ill.



worlds known fan belts.

L. H. GILMER COMPANY, Tacony, Philadelphia, Pa.



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Spring Covers CARS - TRUCKS - BUSSES

Reliable Spring Oiler Co. Columbus, O.

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There's a Fisk Tire of extra value in every size, for car, truck or speed wagon

The Newest Thing In Radio Today Is The

RADIO TROUBLE SHOOTER

For Complete Information and Prices

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Chicago, Ill.

WESTINGHOUSE AIR SPRINGS The finest known method of shock absorption

THE WESTINGHOUSE AIR SPRING CO.

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Here's the Way to Sell Tire Chains

Let the package they come in display them. By making them easy to buy, you automatically make them easy to sell. Dealers like the WESCO carton. Write.

Western Chain Company Chicago, U. S. A.



Built by the oldest maker of Portable Electric Drills in the World.

105 THE UNITED STATES ELECTRICAL TOOL CO. Cincinnati, Ohio, U. S. A.

KISSEL

CUSTOM (2) BUILT Kissel Motor Car Co., Hartford, Wis. "As Silent as a Shadow"

Quincy Compressors Quincy, Illinois

T-538



Stops Pump Shaft Leaks Immediately and Permanently

Conneaut Plastic Metallic Packing molds in the fingers to fit stuffing-boxes of any shape or size. It is a repair for the worn shaft and loose bushing. At your Jobbers in 1-pound and 5-pound cans; if not, write us.

CONNEAUT PACKING COMPANY Conneaut, Ohio



Guaranteed Unbreakable

Gear Shift Ball

Made in all combinations from 11 basic colors. Packed 18 in attractive counter display box. Counter display cards also furnished. Complete with all necessary bushings. 2 in in diameter. Highly polished. Fast seller, Price §1.25. Write for details and catalog of entire line of 12 items. Order from your jobber or direct.

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1420 S. Michigan Ave., Chicago,

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PARTS

AUTO PARTS

SAVES 50% TO 75% ON ALL CARS and Used Gears—Springs and Axles—Cylinders— Motors—Rear Systems, etc. Wire or Write

INDIANA AUTO PARTS CO. 608-10 N. CAPITOL AVE., INDIANAPOLIS, IND. LARGEST CAR WRECKERS IN INDIANA

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Attorney-at-Law and Solicitor of Patents

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Formerly Member Examining Corps, United States Patent Office

American and foreign Patents secured. Searches made to determine patentability and validity. Patent suits conducted. Pamphlet of instruction sent upon request. McGill Building, WASHINGTON, D. C.

FOR SALE-Skelly Special Racing Car. Ran in Indianapolis race last year. H. J. Skelly, 414 Wisconsin Ave., Oak Park, Ill.

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BUSINESS OPPORTUNITIES

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"Clearing \$400 month with my Haywood Vulcanizer. Some return on a \$350 investment." Tire repairs paying big. We furnish everything. Train you free. Easy terms. Haywood Tire Equipment Company, 1318 South Oakley Avenue, Chicago.

FOR SALE—The best located Garage and Accessory place in a booming South Georgia town. A money making place for a live, awake party. Box 6265, Care of Motor Age, 5 S. Wabash Ave., Chicago, Ill.

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WANTED SALESMEN AND DISTRIBUTORS acquainted with Auto Parts Dealers in Illinois and Wisconsin for real, live proposition. Write SALES SERVICE OF AMERICA, 7026 Cottage Grove Ave., Chicago, Ill.

TIRE SALESMEN-We have a clean, well balanced, fast selling line. The tires are handsome, durable, honestly made, on a quantity production basis. Some excellent territory still open for the man who is looking for more than a mere job. Address BROWN RUBBER CO., Lafayette, Ind.

SALESMEN WANTED in several States to handle The Winther Spoke Tightener. Every shop needs one. C. W. Winther, Fresno, Calif.

HOUSE OF A MILLION **AUTO PARTS**

11.

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The largest stock of new and used car and truck parts in the world. We have everything. Always mention model and serial number in order. Write us. All inquiries answered promptly.

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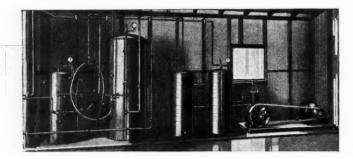
Prest

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Ricke



The Original and Only Auto-Laundry System



HUNDREDS of our Auto-Laundry Machines are reaping big profits for their owners in nearly every state in the Union—forty have been installed in the past 70 days. It knows no competition for economy of operation and profit. Cleans a car in less than 15 minutes, at an operating cost of less than 6 cents a car. The W. E. Garage of St. Louis, washed 135 cars inside of 24 hours—think that over.



You can't make money when the operating cost of a system eats up nearly all the money you get for washing a car. There are more Auto-Laundry Machines in use than all other types of mechanical washing devices combined—that's the answer. Original atomization and mist system—not pressure or steam. Needs no mechanical experience to install or operate. Making good everywhere and the proven machine on the job.





Demonstrating Plants: Gates Auto-Laundry, St. Louis. Springfield Auto-Laundry and Storage, Springfield, Ohio. T.H. Sheppard, Brooklyn, N.Y. W.D. Cooley, Jackson, Mich L. H. Marshall, San Diego, Cal.

Write for Illustrated Circular and Terms Today

Machine Complete—No Extras—f.o.b. St. Louis, Model A—\$990.00, Model B—\$796.50, Model C—\$648.50. All Machines have two or more wash guns; blow-out gun, kerosene gun and unit.

["Auto.Laundry" Reg. U.S. Pat. Off.

Auto-Laundry System Co. 5754Delmar Blvd. St. Louis, Mo.

Member St. Louis Chamber of Commerce



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WATERVLIET SPIRAL

KING BOLT REAMER

For King or Steering Knuckle Bolt Bushings on all Cars and Trucks

A Size for Every Car

. . . and every one with the

Watervliet Self-Cutting Front Pilot

Smooth Cutting True Aligning

The self-cutting front pilot engages lower bushing before the spiral flutes start cutting the upper one. Rear pilot acts as a guide in upper bushing while lower one is being reamed.

A Perfect Tool for a Perfect Job

They Will Not Chatter

Ask Your Jobber or Write for Literature

Watervliet Tool Co., Inc.

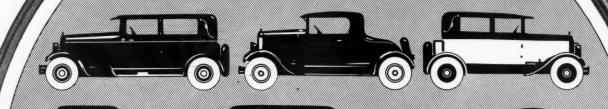
1037 Broadway

Albany, N. Y.

New York, 1780 Broadway Kansas City, 711 Mutual Bldg. San Francisco, 661 Turk St.



FAN BELTS





Selling and Serving Consistently

Rie Nie Fan Belts serve consistently because of the accuracy of their manufacture and the high quality materials used. They sell consistently because dealers and motorists everywhere know how durable they are, and how well they stand up. Rie Nie fan belts are so reasonably priced and give the dealer such a substantial margin of profit that it pays to specialize in them.

Encourage your customers to "carry a spare."







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Air Brakes
All In One Dressing
Battery Paint
Bearing Blue
Blowout Patches for Balloon and High Pressure
Tires

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Radiator Cement
Radiator Hose
Red Tip Blowout Patch
Rim Paint
Rubber Cement (Cold
Patching)
Rubber Filler and Cement

Rubber Splicing Compound Spring Lubricant Tire Mica Tire Paint Tire Tale Valve Grinding Compound Varnish (Clear Auto)

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Branches:

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Joplin Los Angeles Minneapolis New Orleans

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DO RE-WIRING AT A PROFIT

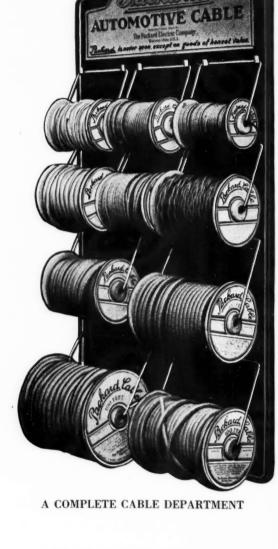
Join the rapidly growing list of Packard Cable users.

Packard Standard Cable Assortments make a complete cable department. They include ten spools of cable that will take care of any car on the road—a Packard Wiring Chart—Wall Display Card—list price schedule—and a *Packard Merchandiser* (see illustration).

No more tangled coils in out of the way places

—No more lost time in taking stock—No more profitless jobs of rewiring.

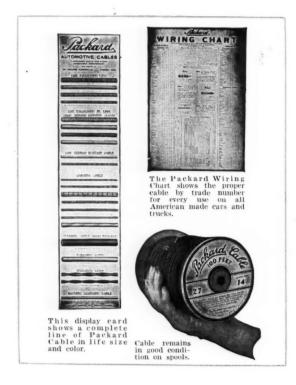
The Packard Way is the way to Profits.



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Warren, Ohio



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